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The OCS Information Program Electronic Bulletin Board

In the past several years it has become increasingly apparent that there is a need for more current information on the offshore program of the MMS than the OCSIP is able to provide through the traditional hard-copy publication medium. To address this need, the OCS Information Program (OCSIP) has established a dial-up electronic bulletin board system (BBS). Through this BBS, users can electronically "download" OCSIP files that are maintained in a more up-to-date format. Most of the files contained within the electronic bulletin board are updated more frequently than is possible in a hard-copy publication format; many are updated biweekly.

To access this system users will need a computer, a modem, communications software, and (for most files), a spreadsheet software package that is compatible with LOTUS.

This system called the Federal Outer Continental Shelf Information (FOCSI) BBS will, in addition to providing file transfer capability, enable users to communicate directly with the OCSIP by leaving messages and requests for publications. Each time a user "logs" onto the BBS, the system will automatically check to see if there are messages from either the OCSIP or other BBS users. In addition, conference sections may be set up within the BBS to gather related files and messages of direct interest to subsets of OCSIP's users.

The required communications parameters and telephone number of the OCSIP's BBS are listed below. Once connected to the BBS the procedures are fairly self-explanatory. Anyone who has any related questions or comments is encouraged to contact the OCSIP directly.

FOCSI BBS

Communications Settings:

Parity: (N)one
Data Bits: 8
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Telephone Numbers:

Data: (703) 285-2500*
Voice: (703) 285-2285*

*** Note:** *Effective February 1989 the OCSIP address will be 381 Elden Street, Herndon, Virginia 22070-4817. The new telephone number for OCSIP will be (703) 787-1029; call this number for the new FOCSI BBS data and voice numbers, which have not been assigned at this time.*

Alaska Update: January 1987-August 1988

OCS Information Report
MMS 88-0073

**Outer Continental Shelf
Oil & Gas Activities**

Preface

The Outer Continental Shelf Information Program (OCSIP) of the Minerals Management Service (MMS) has historically made available, free of charge, two types of documents (summary reports and indexes) that have described oil- and gas-related activities in each of the four MMS OCS Regions: the Alaska, the Atlantic, the Gulf of Mexico, and the Pacific. The OCSIP was mandated by the 1978 Amendments to the OCS Lands Act (43 U.S.C. 1352). Many facets of the Federal oil and gas leasing program have changed significantly in the 10 years since inception of the OCSIP. In recognition of these changes, and in an attempt to reduce administrative costs, the OCSIP has recently modified its publications program.

The OCSIP now produces these documents:

- An *OCS Leasing and Operations Procedures* booklet (in lieu of the former Index);
- A streamlined, annual *Regional Update* report for each of the four MMS OCS Regions (formerly the Summary Reports);
- A biennial *National OCS Compendium* that presents historical information on all of the OCS Regions;
- A four part map series detailing regional offshore and onshore information;
- An *OCS Directory* of Federal and State agencies and their OCS responsibilities; and
- A dial-up electronic bulletin board that features downloadable files containing statistical and tabular information from the leasing and operations functions of the MMS (see inside front cover).

To order any of these products, or for more information about them, contact the OCSIP at the address and telephone number listed below:

OCS Information Program
Office of Offshore Information & Publications
Minerals Management Service, MS 642
1951 Kidwell Drive, Suite 601
Vienna, VA 22180
(703) 285-2285 or (FTS) 285-2285

Please note that as of February 1989, the OCSIP will have a new address as follows:

OCS Information Program
Office of Offshore Information & Publications
Minerals Management Service, MS 642
381 Elden Street
Herndon, VA 22070-4817
(703) 787-1029 or (FTS) 787-1029

Abbreviations and Acronyms

A

- ACOE - Army Corps of Engineers
- ANGTS - Alaska Natural Gas Transportation System
- ANILCA - Alaska National Interest Lands Conservation Act of 1980
- ANWR - Arctic National Wildlife Refuge
- APRI - Alaska Pacific Refinery, INC.

B

- bbl - barrel
- BBO - billion barrels of oil
- BBS - bulletin board service
- Bcfd - billion cubic feet per day
- bpcd - barrels per calendar day
- bpd - barrels per day

C

- CFR - Code of Federal Regulations
- CPC - Coastal Policy Council

D

- DNR - (Alaska) Department of Natural Resources
- DOE - Department of Energy
- DOI - U.S. Department of the Interior
- DOT - Department of Transportation

E

- EA - environmental assessment
- EIS - environmental impact statement
- EPA - Environmental Protection Agency
- EPCA - Energy Policy and Conservation Act
- ESP - Environmental Studies Program
- EEZ - Exclusive Economic Zone

F

- FEIS - Final Environmental Impact Statement
- FOCSI - Federal OCS Information
- FR - Federal Register
- FWS - Fish and Wildlife Service

G

- gal - gallon
- GAO - U.S. Government Accounting Office
- G&G - geological and geophysical

I

- lb - pound

M

- Mbbl - thousand barrels
- Mbpd - thousand barrels per day
- Mcf - thousand cubic feet
- Mcfd - thousand cubic feet per day

- MMbbl - million barrels
- MMBO - million barrels of oil
- MMbpd - million barrels per day
- MMcfd - million cubic feet per day
- MMS - Minerals Management Service

N

- NEPA - National Environmental Policy Act
- NGL - natural gas liquids
- NOAA - National Oceanic and Atmospheric Administration
- NOI - Notice of Intent
- NOS - Notice of Sale
- NPDES - National Pollutant Discharge Elimination System
- NPRA - National Petroleum Reserve-Alaska
- NIL - Notice to Lessees

O

- OCRM - Office of Ocean and Coastal Resource Management
- OCS - Outer Continental Shelf
- OCSIP - Outer Continental Shelf Information Program
- OIP - Office of Offshore Information and Publications
- OPD - official protraction diagram
- OSIM - Office of Strategic and International Minerals
- OTA - Office of Technology Assessment

P

- PARS - Port Access Route Study
- PNOS - Proposed Notice of Sale
- POE - Plan of Exploration
- PRESTO - Probabilistic Resource Estimates - Offshore

R

- RCRA - Resource Conservation and Recovery Act

S

- SSDC - single steel drilling casisson
- SWPEI - Shell Western Exploration and Production, Inc.

T

- TAGS - Trans-Alaska Gas System
- TAPS - Trans-Alaska Pipeline System
- Tcf - trillion cubic feet
- TPU - Technical Publications Unit
- TSS - traffic separation scheme

U

- U.S.C. - United States Code
- USCG - U.S. Coast Guard
- USGS - U.S. Geological Survey

V

- VLCC - very large crude carrier

English-Metric Conversion

Measurements in this document are reported in the format that reflects the most common usage. The following table provides the factors for converting measurements between either U.S. Customary units or International System (SI) of metric units.

<i>U.S. Customary unit</i>	<i>(multiply by to obtain)</i>	<i>SI Metric unit</i>
inches	2.54	centimeters
feet	0.3048	meters
statute miles	1.609	kilometers
nautical (geographic) miles	1.852	kilometers
acres	0.4047	hectares
barrels (U.S.) petroleum	0.15897	cubic meters
gallons	3.785	liters
cubic feet	0.02832	cubic meters
tons, long (deadweight)	1.016	metric tons

<i>SI Metric unit</i>	<i>(multiply by to obtain)</i>	<i>U.S. Customary unit</i>
centimeters	0.3937	inches
meters	3.281	feet
kilometers	0.6214	miles, statute
kilometers	0.5400	miles, geographic (nautical)
hectares	2.47104	acres
cubic meters	6.290	barrels (petroleum, 1 bbl = 42 gal)
liters	0.2642	gallons
metric tons	0.9842	tons, long (deadweight) (2,240 lb)

NOTE: Distances on the Federal Outer Continental Shelf and on land are measured in statute miles. Distances on the offshore State lands are measured in nautical (geographic) miles. Generally, coastal States were granted authority over offshore lands to a distance of 3 nautical miles from their coasts by the Submerged Lands Act (43 U.S.C. 1301 et seq.). The offshore authority of Texas and Florida (on its Gulf Coast side only) extends to 3 marine leagues (approximately 10.35 statute miles) for historic reasons.

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Introduction

Oil and gas continue to compose a significant portion of the energy feedstocks of the Nation. The OCS currently provides approximately 12 percent of the Nation's oil and 26 percent of its natural gas. Though the Alaska OCS Region does not currently have any producing wells, it does contain some of the most promising OCS exploration targets domestically available. Several discoveries have been made in the U.S. Beaufort Sea, as well as in the Canadian portion. Logistical and environmental considerations for any Beaufort development project are immense, however, and the commerciality of these discoveries has yet to be proven.

The offshore segment of the oil and gas industry has undergone significant restructuring in the recent past. This restructuring was brought on by the decline in the price of oil and natural gas that occurred during this period. Figure 1 depicts trends in the price of selected benchmark crude oils for the past 7 years and helps illustrate this point.

Despite the decline in oil prices, offshore operators continue to exhibit a healthy interest in portions of the OCS adjacent to Alaska. Figure 2 depicts the planning areas that the MMS has established on the OCS offshore Alaska for administrative purposes. The sidebar on Official Protraction Diagrams explains their use and availability. In the Beaufort Sea Planning Area, a recent OCS lease sale provided operators with an opportunity to increase their lease holdings surrounding several promising prospects. A record number of bids were submitted by offshore operators during the first OCS lease sale to cover acreage on the OCS in the Chukchi Sea Planning Area.

The State of Alaska continues to move forward with their offshore leasing program. Several North Slope development projects are currently awaiting either permit reviews or improved economic conditions. Full production from the Endicott field in 1987 and enhanced recovery operations in Prudhoe Bay have delayed an anticipated decline in North Slope production by several years.

The Alyeska Pipeline continues to transport nearly 2 MMbpd of North Slope oil to Valdez for transshipment to refineries on the West and Gulf Coasts. The export of crude oil from the United States is currently prohibited, though several congressional initiatives have recently attempted to reverse this. These restrictions do not, however, apply to export of refined products. Though delayed, a proposal to build a refinery in Valdez dedicated to the export market continues to work toward startup of construction in 1989. Two proposals to transport the massive reserves of natural gas located on the North Slope are also proceeding.

Official Protraction Diagrams

The Alaska OCS Region planning areas are mapped on official protraction diagrams (OPD's) using the Universal Transverse Mercator System. Alaska OPD's bear a unique numerical designator. Each OPD covers an area of 1° latitude by 3° longitude that is divided into blocks. Individual blocks, the basic leasing units, are properly referenced by citing both the OPD and block numbers.

An index to Alaska OCS Region OPD's, as well as individual OPD's, can be ordered from the following office at a cost of \$2 each:

Alaska OCS Regional Library
Minerals Management Service
949 East 36th Avenue, Room 110
Anchorage, Alaska 99508-4302
(907) 261-4438

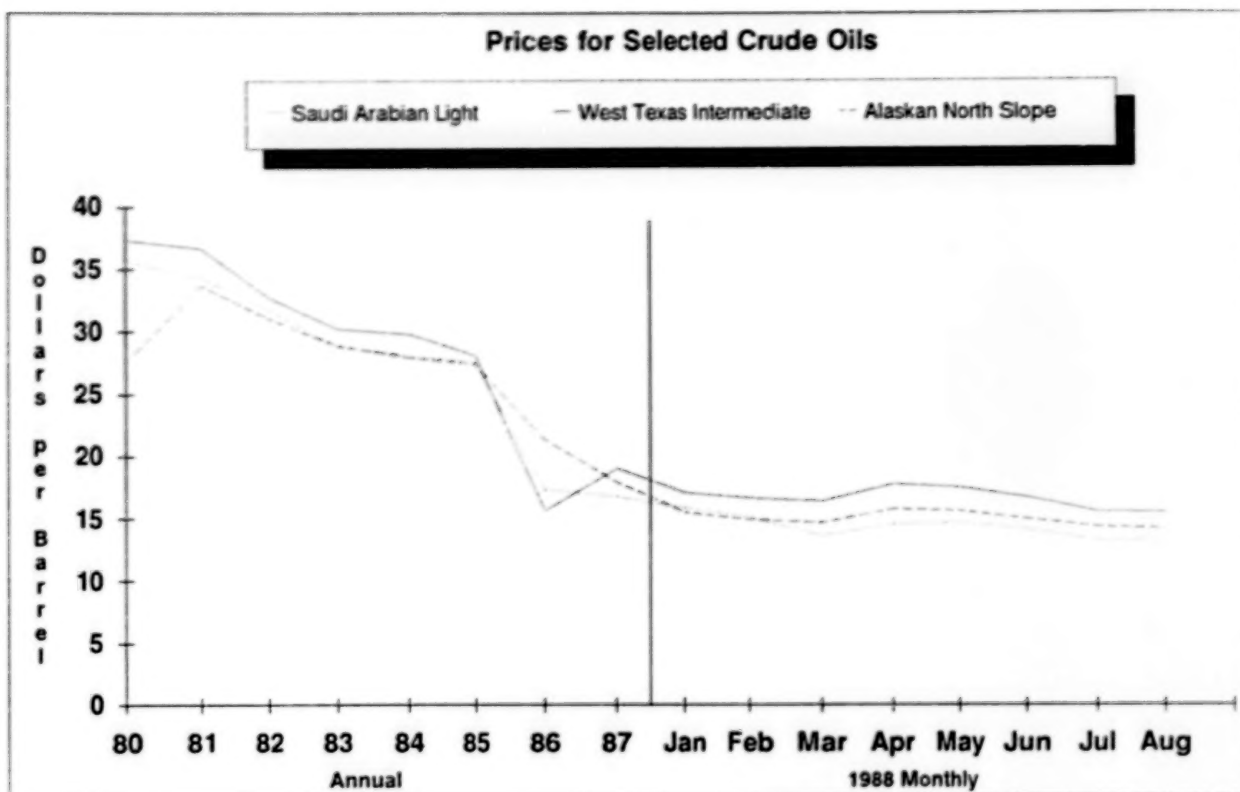


Figure 1. Prices for selected benchmark crude oils, January 1980 - August 1988.



Figure 2. Alaska OCS Region planning areas.

1. Regional Geology and Offshore Oil and Gas Resources of the Alaska Region

Because other documents discuss geologic information in much greater detail, readers are referred to the "Additional Readings" list at the end of this chapter. This edition of the Alaska Update presents a general discussion of the geology for the Chukchi Sea Planning Area because the first OCS lease sale offering acreage in this frontier planning area was recently held.

Geologic Overview of the Chukchi Sea Planning Area

The Chukchi Sea Planning Area has undergone several periods of deformation, which probably started in Late Devonian and continue to the present. Regional subsidence of the Central Chukchi Basin began in Early Mississippian time or earlier and was accompanied by basinward tilting of the flanking Chukchi and Arctic Platforms. See figure 3. The eastern margin of the Central Chukchi Basin was the site of active faulting resulting in accumulations of up to 35,000 feet of Mississippian through Pennsylvanian clastic and carbonate strata of the lower Ellesmerian Sequence. The Brooks Range began to rise in Early Cretaceous time creating the Colville Basin at its front. The Colville Basin terminates in the western part of the Chukchi Sea Planning Area where it abuts the Chukchi Platform. Deformation occurred in Early to Late Cretaceous time resulting in detachment folds and thrust faults in the southern part of the planning area. Wrench deformation also began at this time. This deformation was also accompanied by thick accumulations of strata in the North Chukchi Basin. Later during the Cenozoic Era, continuing strike-slip shear movements further deformed broad areas of the planning area. Continued sedimentation was accompanied by the growth of diapirs and diapiric structures in a small area on the south flank of the North Chukchi Basin. Extensional faulting during Late Cretaceous to Tertiary time created local basins with accumulations of up to 17,000 feet of clastic sediments. Glaciation of the Brooks Range during Quaternary time lowered the sea level and, consequently, exposed the Chukchi Shelf to subaerial erosion and a period of extensive fluvial-channel cutting.

Extrapolation of onshore drilling data of the National Petroleum Reserve-Alaska (NPRA), conducted in the late 1950's through the early 1970's, is the source of petroleum assessments for the Chukchi Sea Planning Area. It is thought that the most attractive reservoir units in northern Alaska are of the Ellesmerian Sequence, which includes the Endicott Group, Lisburne Group, Sadlerochit Group, and Kuparuk River Formation. All of these reservoir rocks are productive in the Prudhoe Bay area east of the Chukchi Sea Planning Area.

No Endicott Group rocks have been penetrated by drilling in western NPRA. However, in the eastern NPRA rocks that appear to be part of the Endicott Group have been encountered, but these were determined to be of poor reservoir quality due to low porosities caused by extensive cementation. Although Endicott Group rocks do not appear either likely or productive in NPRA, thick sequences of pre-Lisburne strata that may be of the Endicott Group age are observed in seismic data in the offshore Northeast Chukchi Basin and in the Central Chukchi Basin.

The Lisburne Group of rocks occur in most of northern Alaska and consist mainly of carbonates. These carbonates are oil productive in the Prudhoe Bay area, where they exhibit average porosities of 10 - 15 percent with a maximum of 27 percent. However, porosity development and reservoir quality of the Lisburne Group in NPRA are poor, and the Lisburne Group is therefore not a primary reservoir target. According to seismic data, offshore areas on the flanks of the Chukchi Platform and the northern and southern margins of the Central Chukchi Basin may be of higher potential reservoir quality because the Ellesmerian Sequence in this area appears to lie in a source-proximal setting that is possibly associated with coarse-grained clastics.

The Ivishak Sandstone is the uppermost formation of the Sadlerochit Group. Its significant thickness, areal extent, and high porosity make the Ivishak the main hydrocarbon-bearing reservoir in the Prudhoe Bay field. In the NPRA, the Ivishak Sandstone becomes increasingly silty the further it extends to the west and southwest; therefore, the Ivishak may have reservoir potential on the western margin of the Chukchi Platform. However, the Ivishak is probably not a

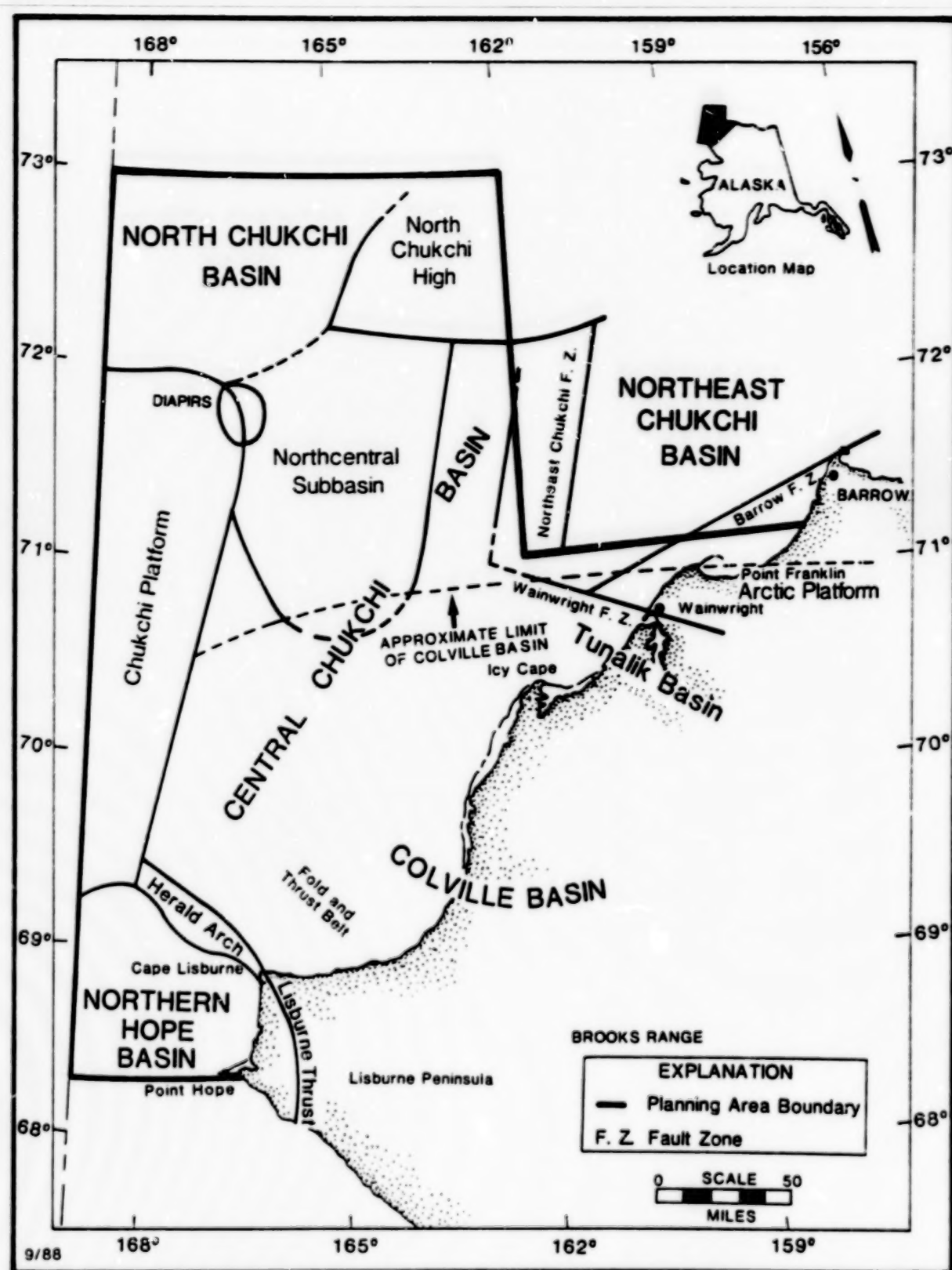


Figure 3. Major structural provinces and sedimentary basins of the Chukchi Sea Planning Area and adjoining parts of the Chukchi Shelf.

viable reservoir in the axial parts of the Central Chukchi Basin.

The Sag River Formation is a fine-grained and well-sorted sandstone in the Prudhoe Bay field, and is a relatively minor hydrocarbon reservoir in this area. In the NPRA, the Sag River Sandstone seems to be present only in the northern part, and occurs as a series of thin overlapping bars that develop more porosity as they stack together northward. Generally speaking, the Sag River reservoir does not appear to be an attractive objective on the North Slope or in the Beaufort Sea Planning Area because of its poor overall reservoir quality and limited thickness. However, in the Chukchi Sea Planning Area, it is speculated that these sands could become thicker, cleaner, and more porous in different facies settings nearer to western source areas.

Another formation that may be a potential reservoir rock is the Pebble Shale Sandstone found across the North Slope in Alaska beneath the Pebble Shale. These sandstones are typically only tens of feet thick, but stratigraphically equivalent sandstones, such as the Point Thompson Sandstones, occur in the eastern North Slope in isolated sections of greater than 300 feet in thickness. This suggests that the depositional settings for these sandstones vary widely from place to place and such sands should therefore be considered as a potential reservoir horizon in the Chukchi Sea Planning Area.

Lower and Upper Brookian Sandstones also have limited reservoir potential in the Chukchi Sea Planning Area. The Nanushuk Group of the Lower Brookian is a regressive sandstone and shale sequence that contains marine, transitional, and nonmarine intervals. In the NPRA, the Lower Brookian Sandstone is the most widely distributed sandstone sequence, but it is a poor prospect for oil accumulation because of its low porosities, limited thickness, and poor lateral continuity. However, equivalent sandstones could exist offshore where the sequence may have been derived from quartz-rich provenances to the west that were subjected to high-energy marine reworking, possibly making this sandstone more attractive as a potential reservoir.

The Upper Brookian Sandstone has been penetrated by many wells that show thick accumulations of sandstone with some shows of oil. West of the Prudhoe Bay field, large known accumulations of heavy oil exist in these sandstones in the West Sak and Ugnu Sands. Porosities for the West Sak reservoir average 29 percent. This reservoir is currently the subject of a pilot study regarding the feasibility of enhanced recovery techniques for extraction of this heavy crude. In the offshore

Chukchi Sea Planning Area, Upper Brookian Sandstone strata are present in the North Chukchi Basin and Northcentral subbasin, some of which may have been reworked Nanushuk Group-equivalent clastics, increasing the potential for the development of favorable reservoir characteristics.

Geological and Geophysical Permits

Table 1 presents data on both Federal and State geological and geophysical (G&G) exploration permits issued. There has been a dramatic decrease in both the number of G&G permits issued and the associated mileage since 1985. Between 1985 and 1987, the number of federally approved OCS permits dropped by 78 percent. Whereas G&G permit approvals in Alaska's State waters were reduced by 60 percent during the same time period. For more detailed information on G&G data, see the "Additional Readings" list at the end of this chapter.

Resource and Reserve Estimates

In 1981, the U.S. Geological Survey (USGS) published the results of an oil and gas resource assessment for the United States, which included those resources believed to exist on the Outer Continental Shelf (OCS). With the formation of the Minerals Management Service (MMS) in 1982, new estimates for the OCS were made and published in OCS Report MMS 85-0012. Later in 1985, the MMS and the USGS agreed to conduct a cooperative assessment of the entire United States to estimate the undiscovered oil and natural gas for a given date. Table 2 (p. 9) presents the current undiscovered economically recoverable oil and gas resource estimates for Alaska OCS planning areas. These figures are preliminary and have been published by the USGS so as to be available for review by the National Academy of Sciences and the American Association of State Geologists. As a result, some changes in the resource estimates are possible. The MMS resource estimates for the Federal offshore provinces are based, in part, upon data from industry exploratory and development operations carried out under permits or mineral leases issued for the Federal OCS. These data were used for identifying and mapping specific offshore prospects and for extrapolating potential prospects where data gaps may exist. Economic parameters were developed for incorporating oil and natural gas prices, development, production, and transportation costs, and future predictions for these and other economic factors that may influence industry's development activities. The MMS developed estimates of undiscovered economically recoverable oil and gas resources by employing a computer mathe-

Table 1. State and Federal geological and geophysical permits issued (July 31, 1988)

Planning Area	1964-84 ** Mileage / Permits	1985 Mileage / Permits	1986 Mileage / Permits	1987 Mileage / Permits	1988* Mileage / Permits	Total Mileage / Permits
Federal Waters						
Beaufort	118,030 / 219	10,242 / 16	9,299 / 6	6,427 / 10	0 / 2	143,998 / 253
Chukchi	88,931 / 54	17,612 / 9	32,572 / 12	6,751 / 3	0 / 0	145,868 / 78
Gulf of Alaska	139,437 / 157	0 / 0	0 / 0	0 / 0	0 / 0	139,437 / 157
Hope	10,474 / 12	0 / 2	0 / 0	0 / 0	0 / 0	10,474 / 14
Kodiak	40,851 / 25	0 / 0	0 / 0	0 / 0	0 / 0	40,851 / 25
Lower Cook Inlet	51,814 / 123	0 / 0	0 / 0	0 / 0	1,566 / 2	53,380 / 125
Navarin	114,608 / 47	5,119 / 9	0 / 0	0 / 0	0 / 0	119,727 / 56
N. Aleutian	73,072 / 73	9,151 / 14	0 / 0	0 / 0	0 / 0	82,223 / 87
Norton	75,195 / 48	348 / 4	0 / 0	315 / 2	0 / 0	75,858 / 54
Shumagin	27,204 / 10	5,330 / 5	0 / 0	0 / 0	0 / 0	32,534 / 15
St. George	131,525 / 72	9,911 / 8	0 / 0	0 / 0	0 / 0	141,436 / 80
St. Matthew	22,302 / 0	0 / 0	0 / 0	0 / 0	0 / 0	22,302 / 0
Total	893,443 / 840	57,713 / 67	41,871 / 18	13,493 / 15	1,566 / 4	1,008,086 / 944
State Waters**						
Beaufort		3,134 / 10	766 / 8	1127 / 9	430 / 1	0 / 26
Chukchi		8,000 / 1	125 / 2	49 / 1	0 / 0	0 / 4
North Aleutian		259 / 8	0 / 0	0 / 0	0 / 0	0 / 8
South Aleutian		45 / 1	0 / 0	0 / 0	0 / 0	0 / 1
St. George		30 / 1	0 / 0	0 / 0	0 / 0	0 / 1
Cook Inlet		618 / 4	1,130 / 5	173 / 1	6,000 / 3	0 / 13
Gulf of Alaska		0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Total		12,086 / 25	2,021 / 13	1,349 / 11	6,430 / 4	0 / 53

Federal water data as of July 31, 1988. State water data as of August 18, 1988.

* Some permits may include geophysical work in parts of onshore basins.

** Associated mileages include deep penetration CDP seismic, high-resolution seismic, gravity, and aero-magnetic data.

mathematical simulation model, Probabilistic Resource Estimates-Offshore, or PRESTO. A description of this model can be found in OCS Report MMS 85-0012.

Currently, within Federal waters off Alaska there are no known economic reserves. This may change in the future as the Seal Island discovery on both Federal and State submerged lands and the Sandpiper Island discovery on Federal submerged lands are further delineated. Additionally, the eastern Beaufort Sea was the site of a discovery on the Hammerhead Prospect, which was announced by Unocal in May of 1988. Table 3 (p. 11) displays reserve figures for both offshore and onshore State lands in Alaska. Since the last edition of the Alaska Summary Report, the Endicott field within the Duck Island Unit started production in October 1987. This field is wholly, and is also the only producing offshore field in the U.S. Arctic subregion.

Additional Readings

Cooke, L. W. 1985. *Estimates of Undiscovered, Economically Recoverable Oil and Gas Resources for the Outer Continental Shelf as of July 1984*. OCS Report MMS 85-0012. Available from Technical Publications Unit, Minerals Management Service, 1951 Kidwell Drive, Suite 601, Vienna, VA 22180; (703) 285-2604.

Tirey, G. B., Zinzer, David, Fulton, Patricia. 1987. *Geological & Geophysical Data Acquisition*. OCS Report MMS 87-0003. Available from Technical Publications Unit, Minerals Management Service, 1951 Kidwell Drive, Suite 601, Vienna, VA 22180; (703) 285-2604.

[Oil and BOE in billion barrels; gas in trillion cubic feet]

[illegible]

Table 2. Estimates of undiscovered economically recoverable oil and gas resources in the Alaska OCS Region as of January 1987 (continued)

[Oil and BOE in billion barrels; gas in trillion cubic feet]

Planning Area	Conditional oil			Conditional gas			MP -HC (1)	Risked mean oil	Risked mean gas	Risked BOE(2)
	95% case	Mean case	5% case	95% case	Mean case	5% case				
Gulf of Alaska Subregion:										
Shumagin										
Leased and unleased	0.12	0.28	0.57	0.00	0.00	0.00	0.01	*	0.00	*
Unleased	0.12	0.28	0.57	0.00	0.00	0.00	0.01	*	0.00	*
Leased	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kodiak										
Leased and unleased	0.11	0.43	0.95	0.00	0.00	0.00	0.03	0.01	0.00	0.01
Unleased	0.11	0.43	0.95	0.00	0.00	0.00	0.03	0.01	0.00	0.01
Leased	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gulf of Alaska										
Leased and unleased	0.18	0.98	2.32	0.00	0.00	0.00	0.04	0.04	0.00	0.04
Unleased	0.18	0.98	2.32	0.00	0.00	0.00	0.04	0.04	0.00	0.04
Leased	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cook Inlet										
Leased and unleased	0.14	0.17	0.26	0.00	0.00	0.00	0.01	*	0.00	*
Unleased	0.14	0.17	0.26	0.00	0.00	0.00	0.01	*	0.00	*
Leased	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Alaska Region:										
Leased and Unleased	1.10	3.32	7.24	0.00	0.00	0.00	0.28	0.92	0.00	0.92

(1) The marginal probability of hydrocarbons. The probability that economically recoverable hydrocarbons exist in the area under study.

* Negligible.

N/A Not Available due to insufficient number of data points.

NOTE: Three categories of resources (unleased, leased, and total) required three separate PRESTO computer runs for each planning area (see Cooke, 1985, listed in the Additional Reading section on page 10). In some cases, splitting of prospects into leased and unleased caused portions of the prospects to be subeconomic. Therefore, adding the risked mean quantities for the unleased acreage to risked mean quantities for the leased acreage may not result in the risked mean quantities for the total acreage. However, the total estimate was properly derived by running the PRESTO program for all prospects.

Additional Readings (continued)

Thurston, D. K., Theiss, L. A. 1987. *Geologic Report for the Chukchi Sea Planning Area, Alaska*. OCS Report MMS 87-0046. Available from Library, U.S. Minerals Management Service, Alaska OCS Region, 949 E. 36th Avenue, Anchorage, AK 99508; (907) 261-4000.

U.S. Geological Survey. 1988. *National Assessment of Undiscovered Conventional Oil and Gas Resources*. USGS-MMS Working Paper, Open-File Report 88-373. Available from USGS, Geologic Division, 12203 Sunrise Valley Drive, Reston, VA 22091.

Table 3. Estimated reserves of State of Alaska oil and gas fields as of December 31, 1987

Area	Field	Oil Reserves (bbl)	Percent of Total Reserves	Percent Field Depleted	Gas Reserves* (mcf)	Percent of Total Reserves	Percent Field Depleted	Producing Formation
North Slope (onshore/offshore)	Endicott	370,000,000	3.60%	0%	800,000,000	1.98%	0%	Kekituk
	Kuparuk	900,000,000	8.76%	31%	600,000,000	1.49%	33%	Kuparuk River
	Lisburne	380,000,000	3.70%	5%	900,000,000	2.23%	7%	Lisburne
	Milne Point	60,000,000	0.58%	8%	0	0.00%	0%	Kuparuk River
	Point Thomson Unit	350,000,000	3.41%	0%	5,000,000,000	12.39%	0%	Thomson Sands
	Prudhoe Bay Unit	4,800,000,000	46.73%	53%	29,000,000,000	71.87%	6%	Sadlerochit
Subtotals		6,860,000,000	66.79%		36,300,000,000	89.96%		
Cook Inlet (offshore)	Granite Point	19,875,000	0.19%	85%	12,429,000	0.03%	88%	Tyonek
	McArthur River	41,234,000	0.40%	93%	612,000,000	1.52%	35%	Tyonek
	Middle Ground Shoal	8,046,000	0.08%	95%	5,337,000	0.01%	94%	Tyonek
	North Cook Inlet	0	0.00%	0%	682,574,000	1.69%	55%	Sterling/Beluga
	Trading Bay*	1,026,000	0.01%	99%	31,000,000	0.08%	67%	Tyonek
Subtotals		70,181,000	0.68%		1,343,340,000	3.33%		
All Others (onshore)	9 Fields	3,341,000,000	32.53%		2,707,000,000	6.71%		
Total		10,271,181,000			40,350,340,000			

* Trading Bay gas reserves were added to McArthur River gas reserves.

Note: Since no transportation system for natural gas exists on the North Slope reserves are uneconomic at this time.

Source: Alaska Department of Natural Resources, "Historical Oil and Project Oil and Gas Consumption," January 1988.

PLATE FOUR

2. Magnitude and Timing of Offshore Developments

Statutory authority to plan for and conduct the offering of leases for OCS acreage is conferred on the Secretary of the Interior by the OCS Lands Act, as amended (43 U.S.C. 1331 et seq.). The Secretary has delegated many of his pre- and postlease responsibilities under this authority to the MMS. Detailed information on the structure of and inputs to the OCS oil and gas leasing program has been compiled in a document entitled OCS Leasing and Operations Procedures, which is available upon request from the OCS Information Program.

July 1987 Final 5-Year OCS Oil and Gas Leasing Program

In accordance with his statutory mandate (43 U.S.C. 1344), the Secretary prepares and periodically revises a schedule of proposed lease sales covering the four OCS regions administered by the MMS. The MMS subsequently prepares a leasing milestones schedule that projects tentative dates for the various steps for each of the OCS lease sales scheduled under the final 5-year leasing schedule. Figure 4 is an updated version of this schedule, which reflects public announcements regarding lease sale status or changes in the timing of prelease events.

Copies of the July 1987 Final 5-Year OCS Oil and Gas Leasing Program milestones schedule and associated documentation are available from the following address and telephone number.

Branch of Offshore Program Development & Planning
Minerals Management Service, MS-645
U.S. Department of the Interior
18th and C Streets, NW.
Washington, DC 20240
Telephone: (202) 343-1072.

Recent OCS Oil and Gas Leasing in Alaska

The first lease sale for OCS acreage offshore Alaska was held in 1976. Since this time a total of 14 sales have been held. Most of these sales were held under

the previous 5-year OCS oil and gas leasing schedules. Of the 12 sales scheduled under the current July 1987 Final 5-Year Schedule, 2 have already occurred: Lease Sale 97 (Beaufort Sea), which was held on March 16, 1988, and Lease Sale 109 (Chukchi Sea) on May 25, 1988. Specific information on each of the Alaska OCS lease sales is presented in table 4 (p.15) table 5 (p.16) and in the sidebars (p.17) that accompany this section. Figure 5 illustrates the relative share of OCS leases held by the major lease owners.

Beginning in August 1987, the MMS incorporated new Executive Branch initiatives to encourage exploration and development of the OCS. In particular, the minimum bid required for all blocks in recent OCS lease sales has been lowered to \$25 per acre from \$150 per acre. The minimum bid for each OCS lease sale is still reviewed on a sale-by-sale basis. This lowering of the minimum bid is thought to be at least partially responsible for the record number of bids submitted by oil companies for acreage offered under Lease Sale 109 and the large number submitted for Lease Sale 97. The \$25 minimum bid level had previously been employed in certain Gulf of Mexico OCS lease sales, but only for bids on blocks in water depths greater than 400 meters.

OCS LEASE SALE 97 (BEAUFORT SEA PLANNING AREA)

OCS Lease Sale 97, held on March 16, 1988, was the fourth OCS lease sale to offer OCS acreage in the Beaufort Sea Planning Area. In addition, this OCS lease sale was the first to be held outside of the Gulf of Mexico OCS Region since October 1984. For OCS lease sales 71 and 87, the Beaufort Sea Planning Area was known as the Diapir Field. Sale 97 offered 3,344 blocks covering approximately 18.3 million acres; 276 bids were received for 218 of these blocks. Of the blocks receiving bids, 202 were subsequently leased (see sidebar p.17). Bids on 16 additional blocks have not been accepted pending resolution of a dispute with Canada over ownership.

Though bidders continued to compete for Western Beaufort OCS acreage during this sale, they also exhibited substantial interest in the eastern Beaufort Sea. This area lies near the prospective coastal plain

APRIL 1968

3-YEAR OCS OIL AND GAS LEASING SCHEDULE																														APRIL 1987																									
OCS PLANNING AREA		DATE	1987			1988			1989			1990			1991			1992			SALE #	ABBREVIATIONS																																	
SALE #	AREA	DATE	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D			J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J															
112	W. GULF OF MEXICO	Aug-87	S	(HELD 5/12/87)																																			112	A Area Identification,															
97	BEAUFORT SEA	Mar-88				S	(HELD 3/18/88)																																97	C Call for Information &															
113	C. GULF OF MEXICO	Mar-88				S	(HELD 3/30/88)																																113	Nominations,															
109	CHUKCHI SEA	May-88	F	P	G	N	S	(Held 5/25/88)																																109	D Comments on Call Due														
115	W. GULF OF MEXICO	Aug-88	F			P	G	N	S	(Held 8/31/88)																														115	E Draft EIS,														
116	E. GULF OF MEXICO	Nov-88	F			P	G	N	S	(Held 11/18/88)																														116	F Final EIS,														
91	N. CALIFORNIA	Feb-89				E	H		F	P	G	N	S																											91	G Governor's Comments														
96	N. ATLANTIC	Feb-89				E	H		F	P	G	N	S																											96	H Due:														
118	C. GULF OF MEXICO	Mar-89	C	A		E	H		F	P	G	N	S																											118	I Public hearings;														
122	W. GULF OF MEXICO	Aug-89	C	A		E	H		F			P	G	N	S																									122	J Issue Environmental														
SU-1	SUPPLEMENTAL SALE	Sep-89													C	D	I	P	G	N	S																			SU-1	Assessment														
107	NAVARIN BASIN	Dec-89							E	H		F	P	G	N	S																								107	K for Supplemental Sales,														
* 121	MID ATLANTIC	Dec-89	C	D		A			E	H		F	P	G	N	S																								* 121	N Notice of Sale,														
95	S. CALIFORNIA	Jan-90	C	D	A				E	H		F	P	G	N	S																								95	P Proposed Notice of Sale,														
* 101	ST. GEORGE BASIN	Feb-90	C	D		A			E	H		F	P	G	N	S																								* 101	R Possible Request for														
123	C. GULF OF MEXICO	Mar-90				C	D	A		E	H		F	P	G	N	S																							123	S Sale														
125	W. GULF OF MEXICO	Aug-90				C	D	A		E	H		F			P	G	N	S																					125															
* 114	GOA / COOK INLET	Sep-90				R		C	D	A				E	H		F	P	G	N	S																		* 114																
SU-2	SUPPLEMENTAL SALE	Sep-90														C	D	I	P	G	N	S																		SU-2															
117	N. ALEUTIAN BASIN	Oct-90					C	D	A		E	H		F	P	G	N	S																					117																
* 108	S. ATLANTIC	Oct-90				R		C	D	A				E	H		F	P	G	N	S																		* 108																
124	BEAUFORT SEA	Feb-91					C	D	A				E	H		F	P	G	N	S																			124																
119	C. CALIFORNIA	Mar-91					C	D	A				E	H		F	P	G	N	S																			119																
131	C. GULF OF MEXICO	Mar-91						C	D	A			E	H		F	P	G	N	S																			131																
126	CHUKCHI SEA	May-91						C	D	A			E	H		F	P	G	N	S																			126																
135	W. GULF OF MEXICO	Aug-91						C	D	A			E	H		F			P	G	N	S																	135																
SU-3	SUPPLEMENTAL SALE	Sep-91														C	D	I	P	G	N	S																		SU-3															
* 120	NORTON BASIN	Sep-91				R		C	D	A			E	H				F	P	G	N	S																	* 120																
137	E. GULF OF MEXICO	Nov-91						C	D	A			E	H		F			P	G	N	S																	137																
* 129	SHUMAGIN	Jan-92				R		C	D	A				E	H		F	P	G	N	S																		* 129																
134	N. ATLANTIC	Feb-92							R		C	D	A		E	H		F	P	G	N	S																	134																
128	N. CALIFORNIA	Feb-92						C	D	A			E	H		F	P	G	N	S																			128																
139	C. GULF OF MEXICO	Mar-92							C	D	A			E	H		F	P	G	N	S																		139																
* 132	WASHINGTON - OREGON	Apr-92				R			C	D	A			E	H		F	P	G	N	S																		* 132																
* 133	HOPE BASIN	May-92						R		C	D	A		E	H		F	P	G	N	S																		* 133																
138	S. CALIFORNIA	Jun-92								C	D	A		E	H		F	P	G	N	S																		138																
* 130	NAVARIN BASIN	Jun-92				R			C	D	A			E	H		F	P	G	N	S																		* 130																
* 140	STRAITS OF FLORIDA		CANCELED SUBJECT TO 3 BEACH FLORIDA AGREEMENT																																																			* 140	
SALE #	OCS PLANNING AREA	DATE	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	SALE #																

* Frontier Exploration Sale. Request for Interest will be issued, if necessary.

Figure 4. July 1987 Final 5-Year OCS Oil and Gas Leasing Program milestones schedule.

Table 4. Dates of and Federal Register notices for significant prelease steps for Alaska OCS lease sales from January 1987 through August 1988

Lease Sale Number/Area	PRE-STEP	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7
97, Beaufort Sea		09/24/84 49 FR 37532	01/22/85	11/07/86 51 FR 40521 12/03/86 51 FR 43675*	07/06/87 52 FR 25316 02/02/88 53 FR 2991***	08/24/87 52 FR 31823	02/12/88 53 FR 4356 02/29/88 53 FR 6112***	03/16/88
109, Chukchi Sea		01/28/85 50 FR 3870	05/28/85	03/11/87 52 FR 7494	11/25/87 52 FR 45255	12/23/87 52 FR 48560	04/20/88 53 FR 13080 05/10/88 53 FR 16592	05/25/88
SU-1, Supplemental Sales								Proposed 09/89
107, Navarin Basin		04/24/84 49 FR 17686 04/28/86 51 FR 15851	07/27/84					Proposed 12/89
101, St. George Basin	06/19/87 52 FR 23418	10/08/87 52 FR 37756	02/02/88					Proposed 02/90
114, Gulf of Alaska	10/31/85 50 FR 45574 01/26/88 53 FR 2208**	05/18/88 53 FR 17902						Proposed 09/90
117, North Aleutian Basin								Proposed 10/90
124, Beaufort Sea		53 FR 35632 09/14/88						Proposed 02/91
126, Chukchi Sea								Proposed 05/91
120, Norton Basin	04/30/87 52 FR 15932 05/15/87 52 FR 18495*							Proposed 09/91
129, Shumagin								Proposed 01/92
133, Hope Basin								Proposed 05/92
130, Navarin Basin								Proposed 06/92

PRE-STEP - Request for interest

STEP 1 - Call for information & Nominations & Notice of Intent to Prepare an EIS

STEP 2 - Area Identification/Tentative Tract Selection (Public Announcement)

STEP 3 - Draft EIS (Notice of Availability)

STEP 4 - Final EIS (Notice of Availability)

STEP 5 - Proposed Notice of Sale (Notice of Availability)

STEP 6 - Notice of Sale

STEP 7 - Sale

*Correction/revision.

**Date change.

***Amendment

Table 5. Lease sale history of the Alaska OCS Region as of August 31, 1988

Planning Area	Lease Sale	Date Held (Proposed)	Blocks Offered	Acres Offered	Leases Issued	Acres Leased	Wells Drilled	OCS Order No.4	Existing Leases	Existing Acreage
ARCTIC										
DIAPHR FIELD	71	10/13/82	338	1,825,770	121	662,880	7	(\$2)	96	531,769
	87	08/22/84	1,419	7,773,447	227	1,207,714	5	(\$1)	216	1,150,760
	8F	12/11/79	46	173,423	24	85,776	7	(\$5)	22	76,002
	97	03/16/88	3,344	18,277,808	202	1,110,754			202	1,110,754
	124	(02/91)								
BARROW ARCH										
	85	CANCELED (03/09/84)								
CHUKCHI SEA	109	05/25/88	4,684	25,531,122	339	1,914,285			339	1,914,285
	126	(05/91)								
HOPE BASIN										
	133#	(05/92)								
BERING SEA										
NORTON	57	03/15/83	418	2,379,751	59	335,888	6		13	74,013
	100	CANCELED (04/07/86)								
	120#	(09/91)								
NAVARIN	83	04/17/84	5,036	28,048,995	163	927,989	8		63	358,678
	107	(12/89)								
	130#	(06/92)								
ST. GEORGE	70	04/12/83	479	2,688,787	96	540,917	10		34	193,572
	89	CANCELED (05/02/86)								
	101#	(02/90)								
NORTH ALEUTIAN	92	ENJOINED (1/13/86)								
	117	(10/90)								
GULF OF ALASKA										
COOK INLET	C1	10/27/77	135	768,580	87	495,307	10		0	0
	90	09/29/81	153	858,247	13	73,157	3		0	0
	RS2	08/05/82	140	785,091	0	0	0		0	0
	136	Combined with 114 - to be held on 09/90								
GULF OF ALASKA	39	04/13/78	189	1,008,499	76	409,058	11		0	0
	55	10/21/80	210	1,195,569	35	199,281	1		0	0
	RS1	06/30/81	175	996,300	1	5,693			0	0
	88	CANCELED (05/02/86)								
(GOA/C1)	114#	(09/90)								
SHUMAGIN	86	CANCELED (02/26/86)								
	129#	(01/92)								
KODIAK										
	127	CANCELED (04/27/87)								
SUPPLEMENTAL SALES*										
	SU-1	(09/89)								
	SU-2	(09/90)								
	SU-3	(09/91)								
TOTAL			17,756	97,914,859	1,443	7,968,679	68	(\$8)	985	5,409,843

* - Designated as Frontier Exploration Lease whose occurrence depends upon industry interest.

S - Area determined productive under OCS Order No. 4.

* - Supplemental sales may or may not contain OCS acreage offshore Alaska.

Note: The data in this table does not cover 17 blocks bid under Lease Sale 83, 4 blocks bid under Lease Sale 87, nor 18 blocks bid under Lease Sale 97. These blocks are in areas subject to jurisdictional disputes with foreign nations, or with the State of Alaska.

OCS LEASE SALE 97 (BEAUFORT SEA PLANNING AREA) (continued)

of the Alaska National Wildlife Refuge (see chapter 4, p.39, for a related discussion). The most active bidders in Sale 97, as either lead bidder or consortium member, were Amoco, Arco, Shell, Unocal, and Chevron. The leases issued by the MMS following this sale are depicted on a map plate series that will be available from the OCS Information Program.

OCS LEASE SALE 109 (CHUKCHI SEA PLANNING AREA)

OCS Lease Sale 109, held on May 25, 1988, was the first OCS lease sale to offer acreage in the Chukchi Sea Planning Area (previously known as the Barrow Arch). At the request of the State of Alaska, Sale 85, which had been previously scheduled for this planning area, was canceled to allow for further assessment of operations in heavy ice conditions.

Lease Sale 109 Statistics

Sale date May 25, 1988	
Planning area	Chukchi Sea
Number of blocks offered	4,694
Total acreage offered	25,631,122
Number of bids received	653
Number of block receiving bids	351
Total of bonuses from high bids	\$478,177,948
Number of companies bidding	16
Highest bid received	\$16,138,000 for Block 718 NR 3-2 Shell, et al.
Number of leases issued	339
Total acreage leased	1,914,285
Total of bonuses from leased tracts	\$474,438,480
Water depths (ft) of tracts receiving bids:	
0 - 150 feet	272
151 - 300 feet	79
Deepest block bid on	225 feet Blocks 373/417 NR 2-8 Shell, et al.

Lease Sale 97 Statistics

Sale date March 16, 1988	
Planning area	Beaufort Sea
Number of blocks offered	3,344
Total acreage offered	18,277,806
Number of bids received	276
Number of block receiving bids	218
Total of bonuses from high bids	\$118,374,936
Number of companies bidding	16
Highest bid received	\$23,388,000 for Block 412 NR 6-4 Amoco, et al.
Number of leases issued	202
Total acreage leased	1,110,741
Total of bonuses from leased tracts	\$114,631,636
Water depths (ft) of tracts receiving bids:	
0 - 150 feet	129
151 - 300 feet	81
301 - 599 feet	8
Deepest block bid on	330 feet Block 212, NR 5-1 Shell

Sale 109 set several new OCS lease sale records for the Alaska OCS Region, including number of tracts and acres bid on and number of tracts and acres leased. With the exception of the Gulf of Mexico, these records stand nationwide. The most active companies in this sale were Shell, Conoco, Elf, and Texaco. The level of industry interest in this frontier OCS area surprised many. The lowering of the minimum bid to \$25 per acre is believed to have stimulated bidding in this sale.

Because no wells have been drilled in the Chukchi Sea Planning Area, industry's interest must be based on (1) data gleaned from wells drilled in the National Petroleum Reserve-Alaska (located adjacent to the Chukchi Sea Planning Area) and (2) seismic data obtained prior to the sale.

OCS Lease Sales Scheduled for the Alaska OCS Region

Ten OCS lease sales remain scheduled under the July 1987 Final 5-Year OCS Oil and Gas Leasing Program for the OCS adjacent to Alaska. In addition to these 10 OCS sales, 3 supplemental sales have been scheduled. The relatively few blocks to be offered

during supplemental sales will be selected from those blocks on which bids from regular OCS sales were rejected or forfeited during the previous fiscal year and from development blocks, including blocks susceptible to drainage. Blocks in the Western and Central Gulf of Mexico OCS Planning Areas will be excluded from consideration in supplemental sales because of the regularity of OCS sales in these areas.

Figure 4 (p.14) lists the remaining prelease steps for each of the sales scheduled under the current 5-year program. Table 4 (p.15) presents public notices for prelease steps that have already occurred for these sales.

OCS Mining Program, Norton Sound Lease Sale

Hard mineral mining has occurred on State mining leases in the Norton Sound offshore Nome, Alaska, since 1985. In a 7-month period in 1987, Western Gold and Mining Company's (West Gold) operations on these leases produced 36,000 ounces of gold. These leases proved to be the State's second largest source. West Gold used the world's largest offshore bucket-ladder dredge to mine this area. Industry interest in the offshore hard mineral resources,

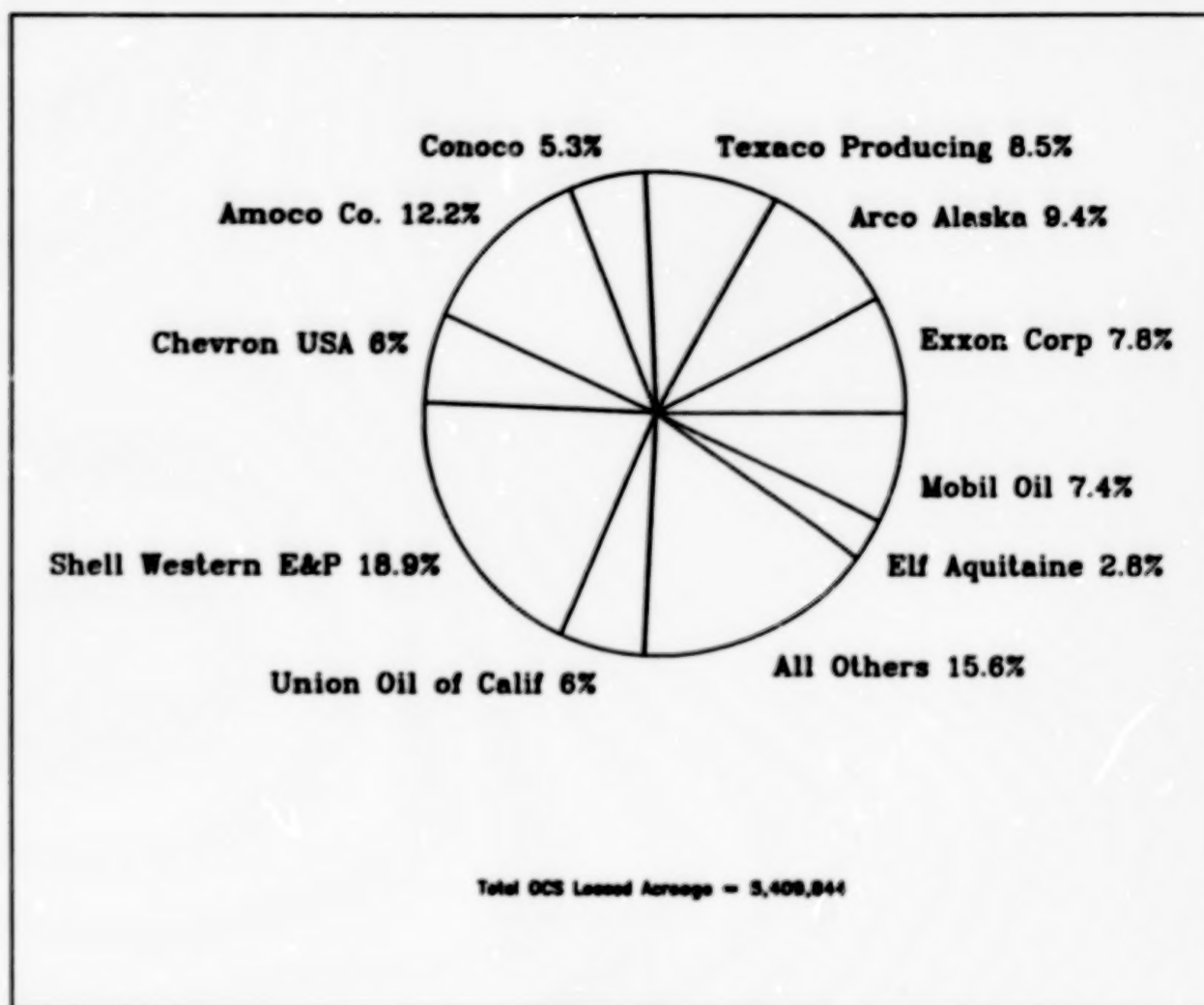


Figure 5. Major Alaska OCS leaseholders by percentages of acreage held as of September 2, 1988.

notably gold placer deposits, that lie off Nome is beginning to extend from State waters to the OCS.

The MMS has begun to establish the regulatory structure under which OCS hard mineral exploration, development, and production would occur. On July 5, 1988, the MMS published the final rule governing geological and geophysical exploration of the OCS for hard minerals (53 FR 25242). In addition, the MMS on August 18, 1988, proposed rules to govern leasing (53 FR 31424) and operations (53 FR 31442).

The MMS has begun the prelease process designed to offer OCS hard mineral leases adjacent to the State's offshore leases in the Norton Sound by August 1989. To assist it in developing this sale, the MMS has established a Coordination Team. The Coordination Team is co-chaired by a representative

from both the MMS and the State of Alaska, and is supported by the MMS Office of Strategic and International Minerals. The Coordination Team comprises representatives of Federal, State, and local agencies and various special interest groups. The mandate of this group is to ensure a safe and environmentally sound mining program in Norton Sound by their participation in the MMS leasing process. The Coordination Team is currently assisting MMS in developing a draft environmental impact statement (EIS) for the proposed Norton Sound lease sale.

On March 11, 1988, MMS issued both a Request for Comments and Nominations for the proposed hard mineral sale in Norton Sound and a Notice of Intent to Prepare an EIS (53 FR 8134). Following this notice, the MMS identified 40 blocks covering slightly

more than 178,000 acres as the area to be analyzed in the EIS. The Coordination Team met in July 1988 to review the draft EIS prior to its publication. It is expected that the draft EIS will be published during October 1988.

Summary of Postlease Activities on the Alaska OCS

The procedures employed by MMS in reviewing and administering OCS postlease activities are discussed in detail in the publication entitled *OCS Leasing and Operations Procedures*, which will be available from the OCSIP. See the sidebar (p.20) on 30 CFR Parts 250 and 256 for information regarding the recent MMS final rule on consolidating operational regulations (53 FR 10596).

EXPLORATION DRILLING

Figure 6 (p.21) graphically depicts exploratory activity by planning area in the Alaska OCS Region since 1976. Over 50 percent of exploratory wells drilled on the Alaska OCS since 1985 have been in the Beaufort Sea Planning Area. All postlease activity stemming from OCS lease sales in the Alaska OCS Region during January 1, 1987 - August 31, 1988, has been exploratory in nature; two wells were drilled in the Beaufort Sea Planning Area during this time. More data on these two wells, the Tern and Aurora Prospects, follows.

Although several discoveries have been made in the U.S. Beaufort Sea, no development or production activities have yet been undertaken. One of the two wells drilled was determined producible by the MMS under the terms of OCS Order No. 4 (see 30 CFR 250.11). This brings the number of wells on the Beaufort OCS to eight that have received positive determinations of producibility under this OCS order. All of the OCS orders were recently rescinded, but their requirements have been consolidated into the MMS Regulatory Program (53 FR 10596).

Tern Prospect

Tern Island is located in the Beaufort Sea, 10 miles from the shores of the Sag Delta, in the Federal enclave created during the joint sale process leading to Joint Federal/State Sale BF in 1979. Tern Island was constructed of gravel by Shell Western Exploration and Production, Inc. (SWEPI) during the winter of 1981-82. SWEPI has now drilled three exploratory

wells from this island, each directionally drilled to different OCS leases. The last of the three wells was spudded on February 10, 1987, and temporarily abandoned on May 10, 1987. All of the Tern Island wells have been determined producible by the MMS. SWEPI has not made any announcement, to date, on whether or not these wells have isolated a commercial discovery.

Aurora Prospect

The Aurora Prospect was drilled by Tenneco on a lease held by ARCO using the Canmar single steel drilling caisson (SSDC)/mat combination. This prospect is located 4 miles offshore of the coastal plain of the Arctic National Wildlife Refuge, and 6 miles from Chevron's onshore KIC well. Tenneco's original plans called for drilling this prospect to 16,500 feet. Tenneco later received approval to continue drilling to 18,500 feet. The Aurora Prospect was spudded on November 2, 1987, and was abandoned on August 31, 1988. Tenneco has released no data on well results.

The SSDC is a modified very large crude carrier. The modifications enable the SSDC to operate year-round under Arctic conditions. The Aurora Prospect is the fourth Arctic well drilled by the SSDC. The first two wells were drilled in the Canadian Beaufort by bottom founding the SSDC onto gravel berms. When Tenneco contracted with Canmar for use of the SSDC, a steel mat was constructed to support the SSDC. This base allows for deployment of the SSDC in water depths of 30-75 feet without bottom preparation. The SSDC/mat combination was first employed by Tenneco in the drilling of their Phoenix Prospect on the OCS adjacent to Harrison Bay. Most of the materials required during the drilling of the Aurora Prospect were housed on the SSDC itself. Some resupply operations were conducted from Deadhorse with back-up from Kaktovik.

Belcher Prospect

Amoco has received approval for its exploration plan covering the Belcher Prospect. The plan covers blocks OCS-Y 917, 918, and 926. Amoco recently received approval to drill the first of its wells on lease 917 of the Belcher Prospect. The semisubmersible drill rig "Kulluk" will be used to drill this well. It is expected that drilling of this well will commence in September 1988.

30 CFR Parts 250 and 256

On April 1, 1988, the "Final Rule" that consolidated into one document the existing multitier rules of the Offshore program of the MMS was published in the *Federal Register* (53 FR 10596). This final rule governs all oil, gas, and sulphur exploration, development, and production operations in the OCS. The MMS laid out the following objectives in developing this rule:

- (1) To restructure and consolidate the past lease operating requirements placed upon OCS oil, gas, and sulphur lessees into a single document;
- (2) To establish performance standards in preference to detailed technical standards to the extent that protection of the environment and safety of operations permit;
- (3) To update safety and environmental requirements, recognize needs identified by technological advances, improve operating practices and experience;
- (4) To eliminate unnecessary reporting and recordkeeping requirements; and
- (5) To clarify and simplify the language of the rule and eliminate redundant and inappropriate provisions.

The current rule at 30 CFR 250 now contains the revised previous edition of 30 CFR 250, the individual OCS Orders developed to govern operations conducted in each of the four MMS OCS Regions, and portions of selected Notices to Lessees and Operators previously issued by MMS in each of the OCS Regions.

For more information on this consolidated rulemaking, write or telephone the following office:

**Branch of Rules, Orders & Standards
Minerals Management Service, MS-646
12203 Sunrise Valley Drive
Reston, VA 22091
(703) 648-7816
(FTS) 648-7816**

In a related effort, the MMS Office of Offshore Information and Publications (OIP) will soon make available its publication entitled *Compilation of OCS Regulations Related to Mineral Resource Activity on the Outer Continental Shelf*. This loose-leaf publication compiles into one document most of the Federal regulations that affect development of the mineral resources of the OCS. For further information on, or for copies of, this publication contact OIP at the following address and telephone number:

***Document Distribution Center
Office of Offshore Information & Publications
Minerals Management Service, MS-642
1951 Kidwell Drive, Suite 601
Vienna, VA 22180
(703) 285-2280**

* Note that as of February 1989, the new office location and phone number will be:

**381 Elden Street
Herndon, VA 22070-4817
(703) 787-1080 or (FTS) 787-1080**

DISCOVERIES

Two operators have announced discoveries resulting from their exploratory efforts on the OCS of the U.S. Beaufort Sea. Shell has announced that it has drilled discovery wells from both Seal and Sandpiper Islands. Shell has indicated that its Seal Island discovery appears to be commercial. UNOCAL has announced that both of its Hammerhead exploratory wells, located on the OCS offshore Flaxman Island, were successful. To date, UNOCAL has not indicated whether the Hammerhead discovery is commercial. Neither company has begun the permitting phase of development and production activities.

State of Alaska Offshore Oil and Gas Leasing Program

The Alaska Department of Natural Resources (DNR) is given the primary responsibility for the management of the State's subsurface hydrocarbon and mineral resources under Title 38 of the Alaska Statutes. It is mandated that the Commissioner of Natural Resources annually prepare an oil and gas leasing program consisting of a schedule of proposed lease sales planned for the next 5 years. This schedule is developed by the DNR in consultation with several organizations including industry. The current Alaska 5-year Oil and Gas Leasing Program is shown in figure 7 (p.23). This schedule differs from the one approved by the Alaska State Legislature in that it reflects approved sale delays and/or deletions that have occurred since that time.

STATE OF ALASKA LEASE SALES

Two Alaska State lease sales were held since the last edition of the Alaska Summary/Index report. Both of them were in 1987. Information on these two sales and selected future lease sales appear below. For a graphical depiction of State and Federal Lease Sale areas, contact the OCS Information Program at the address listed on page iii for a copy of the Alaska Map Plate Series.

Descriptions of State lease sales scheduled beyond 1989 can be found in the State of Alaska 5-Year Oil and Gas Leasing Program listed in the "Additional Readings" section at the end of this chapter. Figure 8 (p.24) depicts State of Alaska offshore leaseholders. On a percentage basis, Chevron and Amerada Hess are more active in State waters than Federal waters. Conversely, SWEPI, Texaco Unocal, and Amoco rank higher in Federal waters than State waters on the basis of percentage of acreage held.

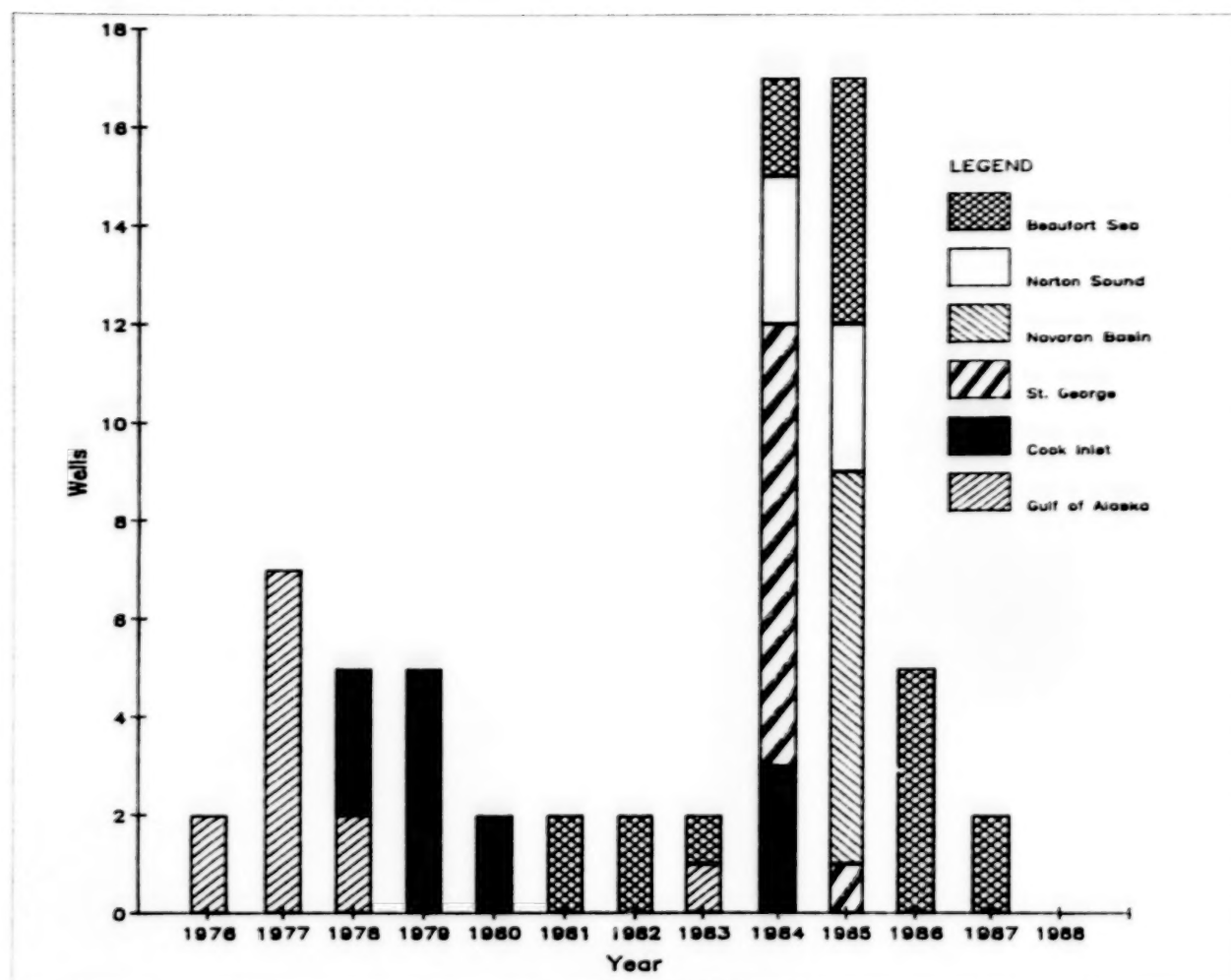


Figure 6. Exploratory wells drilled in the Alaska OCS Region, 1976 - August 1988.

Lease Sale 51, Prudhoe Bay Uplands

Lease Sale 51 was held January 27, 1987. This lease sale offered 119 onshore tracts covering 592,142 acres south of Deadhorse between the Canning River on the east and Sagavanirktok River on the west. Of those offered, 26 tracts covering 100,632 acres were sold. A total of \$289,625 was received from bonus bids with the highest bid per acre offered by Unocal at \$4.30 per acre. Unocal won 14 bids for a total of \$197,071. These tracts carry a 12.5 percent fixed royalty.

Lease Sale 50, Camden Bay

Lease Sale 50 was held June 30, 1987, and offered 35 submerged land tracts located in Camden Bay north of the ANWR between the Staines and Hulahula Rivers. All 35 tracts covering 118,147 acres were sold for a total of \$6,621,371. A 16 2/3-percent royalty

rate was used in this sale. ARCO Alaska paid \$3,438,000 for nine tracts.

Lease Sale 55, Demarcation Point

This sale was originally scheduled for June 1988, and has been rescheduled for September 1988 in order to meet any new legal requirements with respect to the North Slope Borough's recently approved Coastal Zone Management Plan. The proposed area for Lease Sale 55 consists of 197,328 acres of submerged lands offshore of the ANWR. The area is immediately east of the June 30, 1987, Camden Bay Lease Sale 50 area.

Lease Sale 66A, North Slope Exempt

Originally scheduled for June 1988, this sale was canceled and does not appear on the schedule. However, part of the acreage of 66A will be included in the new Lease Sale 69A, consisting of scattered

tracts on the North Slope; Sale 69A is scheduled for September 1988. This sale is an exempt sale, meaning that the sale must meet one or more of the following criteria:

- (1) The land to be leased was previously subject to a valid State or Federal oil and gas lease.
- (2) The commissioner makes a written finding, after hearing, that leasing would result in a substantial probability of early evaluation and development of the land to be leased.
- (3) The land to be leased is adjacent to land owned or controlled by another party on which a discovery of commercial quantities of oil or gas has been made, and where the commissioner finds that there is a reasonable probability that there exists a common hydrocarbon reserve underlying both areas.
- (4) The land to be leased is adjacent to land included in the Federal 5-Year OCS Leasing Program and the commissioner makes a written finding, after hearing, that coordinated or simultaneous leasing with the Federal Government is in the public interest (AS 38.05.180(d)).

Lease Sale 52, Beaufort Sea

This proposed sale area consists of approximately 184,320 acres of state-owned submerged lands offshore of the NPRA extending from Pitt Point on the east to Tangent Point on the west. The location of Alaska's territorial sea boundary and the seaward boundary of NPRA are subjects of a dispute between the Federal Government and the State of Alaska, which is pending resolution by the U.S. Supreme Court. At issue in this litigation is the ownership of a significant amount of tide and submerged land along these borders. Currently, the State of Alaska is seeking to negotiate an agreement with the U.S. Department of the Interior that will define these boundaries for the purposes of oil and gas leasing in Sale 52. This agreement may require adjustment to the boundaries, which may result in the deletion of some acreage between now and the date of the final notice.

Lease Sale 56, Alaska Peninsula

The proposed sale area consists of 1,774,080 acres on the Alaska Peninsula between Liesko Cape and Port Heiden. This sale is scheduled for June 1989. The State considers the petroleum potential of the proposed sale area to be low to moderate.

Lease Sale 67A, Cook Inlet Exempt

The proposed sale area is in Cook Inlet and includes submerged and onshore acreage north of Kachemak Bay. Any acreage offered in this sale area must receive a specific nomination by December 31, 1988. The sale is scheduled for June 1989.

EXPLORATION IN STATE WATERS

No exploratory wells were drilled in Alaska State waters during the period of this report. Those wells that were drilled were developmental and are associated with existing fields in Cook Inlet and the Endicott Field in the Beaufort Sea.

DEVELOPMENT IN STATE WATERS

In the Arctic where the cost of oil and gas development projects are very high, fields that would be major finds in the lower 48 States may be uneconomical in this remote and harsh environment. Therefore, any project that can use existing infrastructure becomes that much more economically attractive. As more of the existing onshore oil fields are developed, the more improved is the economic feasibility for all Arctic fields, including those in Federal and State waters. Table 6 (p. 26) is presented in an effort to give a more complete picture of existing and potential oil and gas development projects on the North Slope, as well as existing projects in the State waters of Cook Inlet.

Arctic Subregion

Endicott Field/Duck Island Unit.--The

Endicott field is the first commercial oil and gas development in U.S. Arctic waters. This field was discovered in 1978 and is believed to hold 1 billion barrels of oil. The Endicott field comprises tracts obtained during several State lease sales, including the Joint Federal/State lease sale of 1979. Endicott consists of a 45-acre main production island with enough space for 70 wells and a 10-acre satellite drilling island that has room for 50 more wells. These islands are connected to shore by a gravel causeway that provides vehicle access as well as the foundation for the pipeline.

ALASKA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS

N = Nominations Requested
A = Proposed Sale Area Added to 5-Year Leasing Schedule
C = Call for Comments:
¹ New Sales and 5-Year Schedule Revision
² Requested for General Information
³ Requested for Socioeconomic and Environmental Information

L = Preliminary Land Status Check
P = Preliminary Finding/Preliminary Notice
[AS38.05.945(a)(3)]
M = Public Meetings or Teleconference
Z = ACM P review begins

F = Final Finding/Final Notice of Sales and Terms
[AS 38.05.945(a)(4)] and Alaska Coastal Management
Program Consistency Determination, if Required

S = Sale

*** = A Best Interest Finding May not be Required**
[AS 38.05.035(e)(7)]

Figure 7. State of Alaska lease sale schedule showing significant presale events.

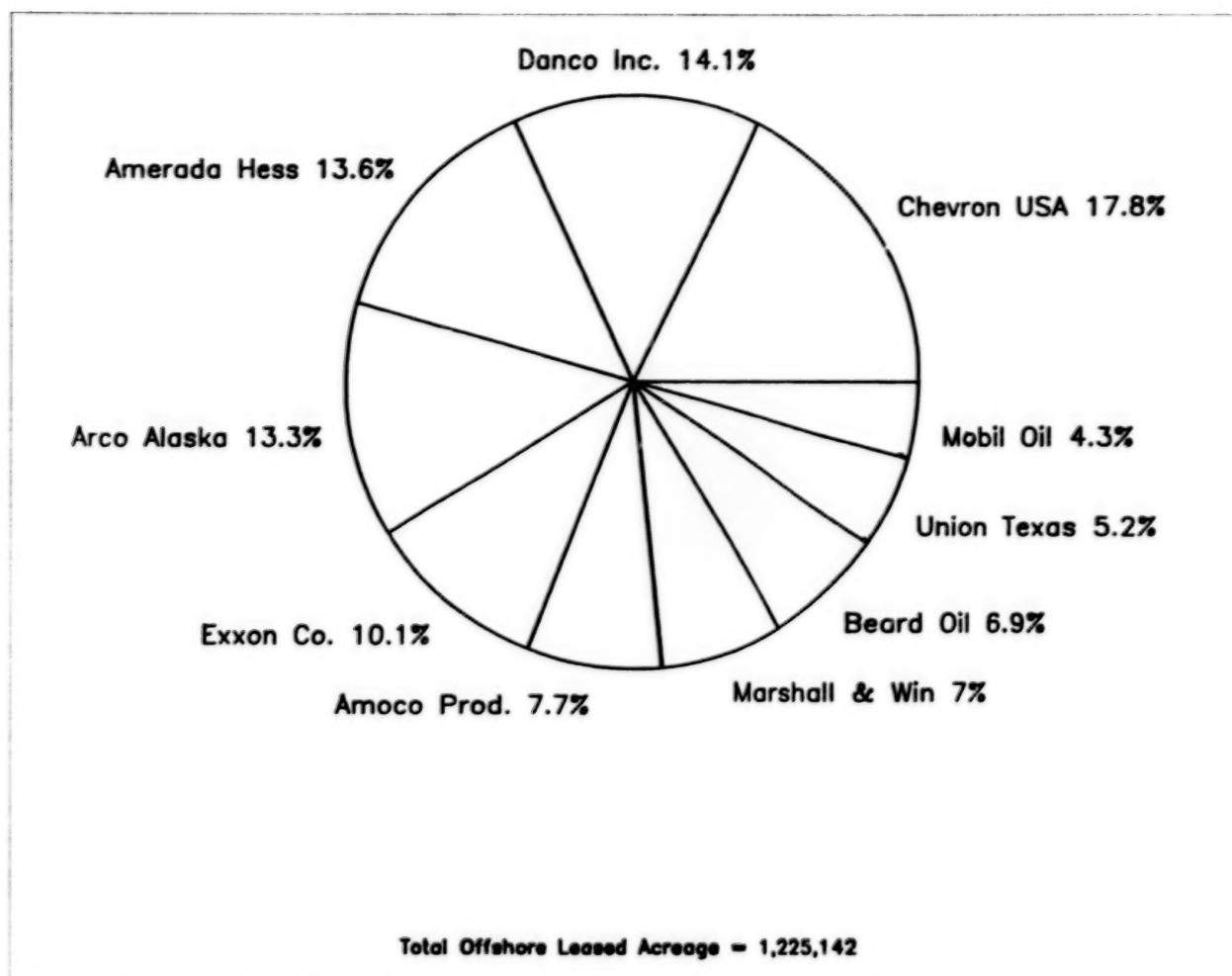


Figure 8. Major State of Alaska offshore leaseholders by percentage of acreage held as of August 31, 1988.

Endicott Field/Duck Island Unit (continued)

When construction began in April 1985, cost estimates for the project were estimated at more than \$2 billion. Although this field is very large by "lower 48" standards, new approaches were developed to maximize efficiency for this expensive Arctic project. The total number of wells for the project was reduced and many of the production modules were constructed and tested in the lower 48. These production modules were constructed and tested by Brown and Root in New Iberia, Louisiana, under a \$50 million contract. Prior to this, Houston Contracting Company was building the interisland pipelines and the 24-mile pipeline that connects Endicott to Pump Station no. 1 of the trans-Alaska pipeline. Standard realized significant cost savings by constructing fewer but larger modules, which not only saved expensive Arctic construction costs but also required fewer

barges for the 9000-mile trip to the North Slope. The August 1987 sealift brought 25,000 tons of production facilities to the Endicott site. The result of Standard's cost savings program lowered the project cost to \$1.1 billion.

The field started test production in August 1986 and averaged 2,015 barrels per month. Full production began in October 1987, three months earlier than scheduled, at 1,964,424 barrels per month or about 65,500 barrels per day (bpd). Currently, production from Endicott is averaging about 100,000 bpd from 27 wells.

Lisburne Project.--The Lisburne pool is part of the Prudhoe Bay field and also lies geographically within the Prudhoe Bay Unit, which extends into State waters. This project originally called for six drilling pads from which up to 180 wells would be

drilled. Five of these drilling pads were onshore; the sixth was proposed to be on a gravel island in the middle of Prudhoe Bay and connected to shore via a gravel causeway. The Army Corps of Engineers (ACOE) initially denied ARCO's permit stating that further environmental study would be necessary. Since that time, ARCO engineers have reevaluated and discovered that the reservoir can be successfully developed through a directional drilling program from the onshore drill pad sites. ARCO has therefore dropped its application to construct a gravel causeway for the Lisburne project.

The Lisburne field went into production in October 1986 producing about 7,600 bpd. By January 1987, the field was producing over 45,000 bpd and has been producing at about that rate ever since. As of April 1988, the Lisburne field was producing from 46 production wells.

Niakuk Project.--The Niakuk field is a small complex reservoir in the highly faulted Kuparuk sands located in Alaska State waters west of the Endicott field. The State leases overlying this field were obtained in 1965 and 1967. Since that time, nine wells have been drilled by Standard Alaska with Niakuk no. 5 being the discovery well and Niakuk no. 6 the delineation well. The proposed project consists of expanding an existing gravel island in 4 1/2 feet of water on which Niakuk wells 4, 5, and 6 are located. Additionally, the proposal calls for construction of (1) a 6,600-foot gravel causeway with 350 feet of breach for water circulation and fish passage and (2) a 1 3/4-mile gravel road onshore to the existing Lisburne production facilities. Plans currently call for drilling 11 new wells and reworking the 3 existing wells on the island for development service, with a minimum construction of processing facilities. Scheduled start-up is late 1991 at 20,000 bpd if the necessary permits are obtained by mid-1989. Including an enhanced oil recovery program, the field is estimated to ultimately produce 58 million barrels of oil over a 15-year lifespan.

The project is currently on hold pending action by the ACOE to approve or disapprove the permit on the gravel causeway. It may be impossible, technologically and economically, to use an extended reach drilling program such as that used in the Lisburne project. Standard proposes the construction of the gravel causeway as essential to the viability of the project because of the inherent difficulty in hitting a small reservoir through directional drilling. This difficulty is further compounded by (1) the intervening Niakuk fault and (2) the potential for lost reserves stemming from design impacts on the enhanced-oil-recovery waterflood project, which accounts for up to 21 percent of the total projected reserves.

Standard has estimated the following benefits to the State of Alaska if the project commences as proposed:

Royalty	\$125 Million
Severance Tax	112 Million
State Income Tax	38 Million
Ad Valorem Tax	16 Million
*Capital Spending	133 Million
Total	\$424 Million

*(2/3 in Alaska)

The estimated Federal income tax for the Niakuk project is \$111 million. Further monetary benefits may be realized by Alaska and other States through construction and operations jobs. The key to the project's economic viability, according to Standard, is gaining the necessary permits to drill from an expanded existing gravel island and transporting crude to shore via pipeline on a gravel causeway foundation. However, the ACOE has stated that they believe there are unacceptable impacts resulting from the Endicott causeway, and consequently they are examining causeway proposals and potential impacts very closely. It is unclear at this time whether the ACOE will approve or disapprove the Niakuk causeway.

Cook Inlet Area

Steelhead Platform.--The Steelhead platform jacket was placed in Cook Inlet in June 1986 by Marathon Oil Company, operator of the project. As overall Cook Inlet production slipped below 70,000 bpd compared to the 1970-73 production rate of 225,000 bpd, Marathon and partner Unocal accepted the challenge of developing the gas sands that form 26 separate reservoirs compounded by old well congestion in the main Hemlock sands producing area. The platform deck was installed in November 1986. This platform is one of four that are developing the McArthur River field in the Trading Bay Unit in State waters. Steelhead is used primarily (1) for developing the Grayling gas sands because none of the other three platforms can reach that target and (2) for expanding the development of oil reserves in reservoirs known as the G-zone and West Foreland, which underlie the Grayling sands. The produced gas is to meet the demand in the Anchorage area and sustain deliveries of liquified natural gas to Japan.

Table 6. Status of Alaska State coastal exploration, development, and production projects

Unit/Field/ Prospect	Designated Operator	Lease Sale	Sale Date	Reserves(1) In Place	Reserves(1) Recoverable	API Gravity	Exploratory Drilling	Delin- eation	Devel- opment	Primary Prod.	Secondary Prod.	Tertiary Prod.	Status as of September 1988
NORTH SLOPE AREA													
Prudhoe Bay Unit	ARCO/ Standard Alaska	State Sale 13 Sale 14 Sale 18	12/09/84 07/14/85 01/24/87	23.5 BBO	9.4 BBO 29 Tcf	26.4 degrees	X	X	X	X	X	X	Enhanced recovery techniques & good reservoir management will keep production at 1.5 MM bpd until 1989 with slower production decline now anticipated, see Table 9. Eileen West End field started producing in June 1988. Peak production will be 60 - 70,000 bpd by 1990 from 76 wells.
Kuparuk Unit	ARCO	State Sale 14	07/14/85	4400 MBO	1070 MMBO	23 degrees	X	X	X	X	X	X	Installed new central gas facility. As of 12/31/87, field 31% depleted; Over 100 MMBO produced in 1987.
Milne Point Unit	Conoco	State Sale 14	07/14/85		60 MMBO	22 degrees	X	X	X	X			Began \$34 million expansion project with 4 new well pads & 10 new wells; Must produce 30,000 bpd to be economic.
Gwydyr Bay Unit	Conoco	State Sale 23	09/10/89		30-60 MMBO		X	X					Total of 12 wells. Renewed interest in prospect by Vaughn Petroleum (et al) in 1987. Drilled 2 wells both P&A. Reduced reserve estimates & wait for higher oil price.
Kaktovik Prospect (KIC well)	Chevron	Negoti- ated with ASRC	11/83	N/A	N/A	N/A	X						State Superior Court Judge rules in favor of Chevron on nondisclosure of KIC well data to State agencies.
West Sak Field	ARCO	BF(SM)	12/12/79	15-25 BBO	750 MMBO	22.4 degrees	X	X					\$10 Billion investment over next 10 years. Estimate production up to 200,000 bpd by mid-1990's.
UGNU Field in Kuparuk/ Prudhoe/ Milne	ARCO	State Sale 13 Sale 14 Sale 18	12/09/84 07/14/85 01/24/87	6-11 BBO	0	11 degrees	X						Technologically impossible to develop at this time.
Usturne Field	ARCO	State Sale 18	01/24/87	3000 MBO	400 MMBO	28 degrees	X	X	X	X			Full production began October 1986 @ 35,000 bpd. ARCO dropped plans for gravel causeway & island to develop field. Development is from coastal site using extended reach drilling program.

Table 6. Alaska State coastal exploration, development, and production project status
(continued)

Unit/Field/ Prospect	Designated Operator	Lease Sale	Sale Date	Reserves(1) in Place	Reserves(1) Recoverable	API Gravity	Exploratory Drilling	Delin- eation	Devel- opment	Primary Prod.	Secondary Prod.	Tertiary Prod.	Status as of September 1988
Point Thomson Unit	Exxon	State Sale 18	01/24/67		350 MMBO 5 Tcf	37 degrees	X	X					Shut in. Development production pending construction of natural gas pipeline.
Duck Island Unit (Endicott)	Standard Alaska/ Exxon	State Sale 23 & BF(SM)	09/10/69 12/12/79	1000 MBO	.8 Tcf 375 MMBO	23 degrees	X	X	X	X			Began production 3 months early @ 40,000 bpd; currently @ 100,000 bpd.
North Star	Amerada Hess			N/A	N/A	N/A	X						Completed 2 wells during 1986.
Colville Delta (Texaco)	Texaco			N/A	N/A	N/A	X						Drilled 2 wells during 1986 one offshore, one onshore
Niakuk Prospect	Standard	State Sales 14 & 18	07/15/65 01/24/67	145 MBO 88 Bcf	58 MBO 35 Bcf	25 degrees	X	X					Project under review by ACOE. Proposal includes gravel causeway/ expansion of Niakuk #1 island. Estimated production is 20,000 bpd.
COOK INLET OFFSHORE													
Trading Bay Field	Union	State Sales 7 & 9	12/19/61 07/07/62		2 MMBO	35.3 degrees	X	X	X	X	X		Marathon sets Steelhead platform 11/87 to develop Grayling gas sands. Blowout occurred 12/87. Repairs to be completed by 5/89.
McArthur River	Union				*	35.3 degrees	X	X	X	X	X		Oil field 93% depleted; 21,600 bpd, 46,100 Mcfd.
Middle Ground Shoal	Amoco	State Sale 9	07/07/62		11 MMBO .006 Tcf	35.3 degrees	X	X	X	X	X		Oil field 95% depleted; 8,200 bpd, 4,600 Mcfd.
North Cook Inlet	Phillips	State Sale 7	12/19/61		850 Tcf		X	X	X	X			Gas field 55% depleted; 112,300 Mcfd.
Granite Point	Mobil				22 MMBO 016 Tcf	35.3 degrees	X	X	X	X	X		Oil field 85% depleted; 8,100 bpd, 7,133 Mcfd.

* Reserve estimate combined with Trading Bay field.

(1) Reserves measured in millions and billions of barrels of oil (MMBO, BBO) and in billions of cubic feet of gas (Tcf).

SOURCE: Alaska Department of Natural Resources 1988.

Steelhead Platform (continued)

The \$160-million platform began producing in mid-1987. During the drilling of the fourth well on December 20, 1987, a gas blowout occurred, which subsequently caught fire, burned for a week, and then extinguished itself. In nearby Seward, Alaska, Santa Fe's "Key Hawaii" jack-up rig lay idle and provided the potential to drill a relief well should it have proved necessary. The blowout occurred while the operator was drilling an oil well and attempting to cement the 13 3/8-inch casing. There were no injuries, but the platform's helideck, crew quarters, rig, and crane boom were destroyed. In June 1988, another blowout occurred during the drilling of a relief well to intersect the central well that blew out in December 1987. The relief well was successfully completed by the Diamond M Falcon semisubmersible drilling rig. The uncontrolled well was cemented during the first week of August 1988. Both of these blowouts were successfully controlled. Repairs to the structure are expected by October 1989.

PRODUCTION IN STATE WATERS

The Endicott field is the only producing field totally within Federal or State Arctic waters. Full production from the Endicott field began in October 1987, bringing the number of producing fields in State waters to six. Table 7 displays production data for Cook Inlet and Arctic State waters. The Alaska Department of Natural Resources Division of Oil and Gas annually reevaluates projected production statistics for onshore and offshore Alaskan fields on the basis of additional reservoir data. New technology for enhanced oil recovery in Prudhoe Bay has increased the projected production for the Prudhoe Bay field, moving the anticipated start of the decline in production for that field from 1988 to 1990, and reducing the anticipated rate of decline from the previously predicted 10-15 percent per year to a decline of less than 10 percent per year. Table 8 details the projected production statistics for State of Alaska oil and gas fields. The Kuparuk field also experienced projected production increases of several hundreds of thousands of barrels of oil over the life of the field. Conversely, projected production estimates for the Lisburne field have been reduced by several tens of thousands of barrels over its lifetime. The 1.5 million bpd being produced from the Prudhoe Bay field will be reduced by half to 773,000 bpd by 1994. Coinciding with the 50 percent reduction in produced oil of the Prudhoe Bay field in 1994, which also represents 63 percent of Alaska's reserves,

Table 7. State of Alaska offshore production statistics as of April 30, 1988

Field	1987	Thru April 1988	Cumulative (1986-4/88)
Granite Point			
Oil (bbl)	2,787,672	854,830	107,648,355
Gas/associated and dry (mcf)	2,431,177	812,992	93,090,878
McArthur River			
Oil (bbl)	7,374,814	2,405,383	532,577,502
Gas/associated and dry (mcf)	13,528,802	5,251,352	332,344,565
Middle Ground Shoal			
Oil (bbl)	2,833,768	878,626	7,072,854
Gas/associated and dry (mcf)	1,566,425	526,445	79,914,664
North Cook Inlet			
Oil (bbl)	0	0	0
Gas/associated and dry (mcf)	42,904,571	14,928,812	835,291,008
Trading Bay			
Oil (bbl)	934,947	236,467	89,700,237
Gas/associated and dry (mcf)	1,434,987	445,907	64,445,935
Endicott			
Oil (bbl)	8,795,738	13,334,298	22,130,036
Gas/associated and dry (mcf)	8,237,404	12,145,698	20,383,102
Total Offshore Production			
Oil (bbl)	22,726,937	17,771,584	794,375,629
Gas/associated and dry (mcf)	79,103,366	34,111,206	1,405,186,850

are significant production declines for the other North Slope fields. At that time, the Kuparuk field will have been reduced by 33 percent, Lisburne will be at its peak although the peak has been reduced from earlier estimates, Endicott will be down 30 percent, and Milne Point is currently non-producing, but may commence production in late 1988. The inevitable decline in production of existing North Slope area fields means that the Alyeska Pipeline will have an unused capacity of 800,000 bpd by 1994 or roughly the equivalent current daily production of three "Kuparuk-size" fields, unless new fields are discovered and brought into production.

Additional Readings

Alaska Department of Natural Resources. 1988. *Five-Year Oil and Gas Leasing Program, January 1988*. Available from Alaska DNR, Division of Oil and Gas, 3601 C St., 13th Floor, Anchorage, AK 99510.

Alaska Department of Natural Resources. 1988. *Historical and Projected Oil and Gas Consumption, January 1988*. Available from Alaska DNR, Division of Oil and Gas, 3601 C St., 13th Floor, Anchorage, AK 99510.

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**Table 8. Projected State of Alaska North Slope area and Cook Inlet production statistics, by field
(1988-2013)**

[barrels per day]

Year	North Slope Area						Cook Inlet Area					Grand Total
	Total Prudhoe	Total Kuparuk	Total Lisburne	Total Endicott	Total Milne Pt.	Subtotal	Granite Point Field	McArthur River Field	Trading Bay Field	Middle Ground Shoal	Subtotal	
1988	1,550,000	260,000	50,000	100,000	17,000	1,977,000	7,100	19,300	2,400	7,300	36,100	2,013,100
1989	1,550,000	260,000	50,000	100,000	17,000	1,977,000	6,400	18,100	2,200	6,700	33,400	2,010,400
1990	1,348,000	260,000	70,000	100,000	14,000	1,792,000	5,800	17,000	2,000	6,100	30,900	1,822,900
1991	1,173,000	250,000	70,000	100,000	12,000	1,605,000	0	0	0	0	0	1,605,000
1992	1,021,000	240,000	70,000	85,000	10,000	1,426,000	0	0	0	0	0	1,426,000
1993	888,000	205,000	70,000	75,000	0	1,238,000	0	0	0	0	0	1,238,000
1994	773,000	175,000	70,000	70,000	0	1,088,000	0	0	0	0	0	1,088,000
1995	672,000	150,000	70,000	65,000	0	957,000	0	0	0	0	0	957,000
1996	585,000	125,000	70,000	60,000	0	840,000	0	0	0	0	0	840,000
1997	509,000	105,000	70,000	55,000	0	739,000	0	0	0	0	0	739,000
1998	443,000	90,000	65,000	50,000	0	648,000	0	0	0	0	0	648,000
1999	385,000	75,000	58,000	45,000	0	563,000	0	0	0	0	0	563,000
2000	335,000	65,000	52,000	40,000	0	492,000	0	0	0	0	0	492,000
2001	291,000	55,000	47,000	20,000	0	413,000	0	0	0	0	0	413,000
2002	254,000	45,000	42,000	10,000	0	351,000	0	0	0	0	0	351,000
2003	221,000	40,000	38,000	0	0	299,000	0	0	0	0	0	299,000
2004	192,000	35,000	34,000	0	0	261,000	0	0	0	0	0	261,000
2005	167,000	30,000	31,000	0	0	228,000	0	0	0	0	0	228,000
2006	145,000	25,000	28,000	0	0	198,000	0	0	0	0	0	198,000
2007	126,000	20,000	25,000	0	0	171,000	0	0	0	0	0	171,000
2008	110,000	15,000	20,000	0	0	145,000	0	0	0	0	0	145,000
2009	96,000	15,000	15,000	0	0	126,000	0	0	0	0	0	126,000
2010	83,000	10,000	10,000	0	0	103,000	0	0	0	0	0	103,000
2011	72,000	10,000	0	0	0	82,000	0	0	0	0	0	82,000
2012	63,000	10,000	0	0	0	73,000	0	0	0	0	0	73,000
2013	55,000	10,000	0	0	0	65,000	0	0	0	0	0	65,000

Note: All fields are capable of producing beyond these projected dates. North Slope fields near the economic limit as they approach 0 bpd. Cook Inlet fields were arbitrarily projected through 1990.

SOURCE: Alaska Department of Natural Resources

3. Oil and Gas Transportation and Onshore Support Facilities

Vessel Transportation

ARCTIC SEALIFT

Excluding 1988, the Arctic sealift has been an annual event for two decades. The 1987 sealift originated in New Iberia, Louisiana, and carried production modules for the Endicott field on its 9,000 mile journey to the North Slope. This sealift involved five barges carrying 25,000 tons of modular equipment. The 1986 sealift was the third largest, involving 27 barges carrying more than 100,000 tons of assembled modules to the North Slope. This sealift carried, among other modules, the new central gas facility for the eastern portion of the Prudhoe Bay field, a production center for the Lisburne field, and the third central production facility for the Kuparuk field.

Although a sealift was unnecessary in 1988, one is being planned for 1989 that will bring treatment and injection facilities for produced water at Prudhoe Bay and enhanced oil recovery and drill-site facilities for the Kuparuk River field. The water treatment facility will double capacity at one of three flow stations at Prudhoe Bay, while the enhanced oil recovery project will expand Kuparuk's capacity to produce miscible injectant. The drill-site facilities will be modular and capable of being trucked to any site that needs them. The sidebar summarizes data on sealifts to the North Slope since 1968.

Year	Barges	Tonnage
1968	2	5,529
1969	31	75,000
1970	36	187,000
1971	6	16,022
1972	2	6,192
1973	8	21,000
1974	16	65,650
1975	47	154,420
1976	21	64,324
1977	7	45,790
1978	10	39,558
1979	2	7,984
1980	10	39,558
1981	14	55,446
1982	15	69,600
1983	26	96,500
1984	11	30,089
1985	13	48,159
1986	27	103,033
1987	5	25,443
Totals	309	1,160,830

Source: Alaska Journal of Commerce and Pacific Rim Reporter, 05/10/87.

REGULATION OF TANKERS IN TRANSPORTING ALASKAN CRUDE

Congress passed the U.S. Merchant Marine Act in 1936 in an effort (1) to keep the U.S. Merchant Marine fleet competitive with other nations where shipbuilding is less costly and (2) to ensure an available source of ships during wartime. This Act allowed, among other things, for Federal subsidies for U.S. companies building ships in the United States. These Federal subsidies were of two types: (1) a construction differential subsidy and (2) an operational subsidy for crew wages, insurance, and maintenance and repairs. Vessels constructed using this subsidy provision were excluded from domestic shipping. The Act originally allowed for a construction differential subsidy for ocean liner vessels. It was not until 1970 that Congress amended the Act to include tankers and dry bulk carriers in the construction differential subsidy. Several very large crude carriers (VLCC) were built under this subsidy for use only in international trade. The construction differential subsidy has not been funded since 1981.

In 1985, the Secretary of the Department of Transportation (DOT) issued a regulation allowing tanker owners to repay their construction differential subsidies in order to allow them back into domestic trade. The DOT cited cost figures of 4.5 times as much to ship crude in a 37,500-ton tanker as it does in a 250,000-ton supertanker. This regulation was opposed by the small shipping companies that controlled most of the Alaska oil trade. The window of opportunity to enter back into domestic trade for subsidized vessels lasted for about a year before the U.S. Circuit Court of Appeals agreed with the plaintiffs contention that the Secretary failed to provide a sufficiently reasoned discussion of why this rule was adopted and alternatives were rejected. However during this period, three VLCC's repaid their subsidies and have been operating in the domestic trade since 1987: the ARCO Independence, the ARCO Spirit, and the Brooklyn. These three vessels have essentially taken over the transportation of crude oil from Valdez, Alaska, to West Coast and Gulf Coast refineries. On April 29, 1988, the U.S. District Court of the District of Columbia ruled that the Federal Government would have to give the subsidy repayments back to the shipowners and once again exclude them from

domestic trade. This decision has not been implemented yet, but arguments on a procedure for accomplishing this were heard in August 1988. Part of this procedural problem centers on the availability and capacity of smaller displaced tankers previously employed to ship Alaskan crude and avoidance of an oil storage problem in the Port of Valdez.

Crude Oil Pipelines

The great majority of crude oil produced in Alaska is derived from North Slope wells. This crude, together with limited amounts of natural gas liquids (NGL) is shipped south through the Alyeska Pipeline. Upon its arrival in Valdez, this crude is then transported primarily to refineries on the West or Gulf Coasts of the United States via tankers. Recently a new pipeline has begun operation that can potentially transport Alaskan crude to Gulf Coast refineries from California, thereby saving transportation costs.

ALYESKA PIPELINE

For more than 11 years, the Alyeska Pipeline, previously known as the Trans-Alaska Pipeline System (TAPS), has transported crude oil and NGL nearly 800 miles from the producing wells of Alaska's North Slope fields south to the Port of Valdez. The majority of the crude oil and NGL transported by the Alyeska Pipeline emanates from the giant Prudhoe Bay field, the most productive oil field in U.S. history, but is supplemented by hydrocarbons from the Kuparuk, Endicott, and Lisburne fields. It is anticipated that any new production from either State or OCS discoveries will also be shipped south using the Alyeska Pipeline, which has a 2-million bpd throughput capacity. As production from Prudhoe Bay declines, it is hoped that new discoveries will maintain the volume of crude from the North Slope that now provides up to 20 percent of the Nation's consumption.

ALL-AMERICAN PIPELINE

The majority of crude oil produced by wells located in Alaska is transported by tanker to refineries located on the West and Gulf Coasts of the United States. Crude oil from these tankers is generally offloaded at Panama and transshipped by pipeline to ports on its east coast where it is again loaded on tankers for shipment to Gulf Coast refineries or Puerto Rico or the Virgin Islands. Because of the great distance between origination and destination of

Alaskan crude, high transportation costs reduce the wellhead value of Alaskan crude oil. A new pipeline stretching from California to Texas may, however, offer some relief to Alaskan producers.

The All-American Pipeline, owned and operated by the Celeron Corporation, currently stretches over 1,200 miles from Bakersfield, California, to McCamey, Texas. When complete, this pipeline will extend to Webster, Texas, near Houston. The Celeron Corporation is currently negotiating with Alaskan producers for long-term supply contracts.

Natural Gas Pipelines

Within Alaska most of the natural gas reserves are located on the North Slope, particularly within the Prudhoe Bay Unit. The State of Alaska has estimated remaining proven recoverable reserves of natural gas on the North Slope to be approximately 31-32 Tcf. The current lack of ability to transport these reserves to markets in other parts of the United States or to export markets has prevented their development. During the 11 years of field development on the North Slope, two major proposals have been advanced to transport these natural gas resources; to date, no related construction has begun. Recent developments, however, bode well for the future of natural gas production from Alaska's North Slope.

ALASKA NATURAL GAS TRANSPORTATION SYSTEM

The need to develop and deliver to market the large volumes of natural gas to be found on Alaska's North Slope has long been recognized. In 1976, the U.S. Congress passed and the President signed the Alaska Natural Gas Transportation Act. This Act approved of private industry's construction of the Alaska Natural Gas Transportation System (ANGTS), also known as the Alaska Highway natural gas pipeline. The route of the ANGTS project was approved by the President and Congress ratified it in 1977.

As proposed, the ANGTS was composed of three legs which, when constructed, would connect the Alaska North Slope gas producers to markets in the U.S. West and Midwest. The ANGTS project is composed of one Alaskan line and two Canadian lines. Portions

of the southern routes are complete and are currently being used to transport Canadian natural gas to markets in Oregon and Iowa. Work on ANGTS has been suspended, pending improved market conditions. Recent developments on the ANGTS project are itemized below.

- **December 1987** - ARCO withdrew from further participation in the ANGTS project.
- **June 1988** - The sponsors of the ANGTS project announced that technological advances and an improved economic climate allowed them to reduce the estimates of project completion costs from \$26.1 billion to \$14.6 billion.

TRANS-ALASKA GAS SYSTEM

The Yukon Pacific Corporation proposed in 1983 to build a buried, chilled, high pressure natural gas pipeline that would originate at Prudhoe Bay and run southward, generally along the route of the Alyeska Pipeline, nearly 800 miles to Valdez. As proposed, up to 2.3 Bcfd of natural gas reserves from the North Slope would be conditioned and transported through TAGS to a liquefaction plant and marine terminal located at Valdez. Liquefied natural gas derived from this project would be exported via tanker to potential markets in Japan, Korea, and Taiwan.

Currently, the Yukon Pacific Corporation is awaiting action of several Federal agencies on permit or project approval applications. These agencies include the Bureau of Land Management, the Army Corps of Engineers, the Forest Service, the Economic Regulatory Administration, and the Federal Energy Regulatory Commission. The Yukon Pacific Corporation must yet (1) obtain purchase agreements with the countries that it proposes to export to, (2) obtain supply contracts, and (3) secure its sources of financing prior to beginning construction. Developments related to the TAGS project that occurred during the period of this report are itemized below:

- **December 3, 1987** - The Yukon Pacific Corporation applied to the Economic Regulatory Commission for approval of their plan to export natural gas as directed under Section 3 of the Natural Gas Act.

- **January 12, 1988** - The President issued his determination, as required under Section 12 of the Alaska Natural Gas Transportation Act, that the Trans-Alaska Gas System (TAGS) proposal to export natural gas would neither jeopardize current and future domestic energy markets nor hinder the previously authorized ANGTS project.
- **June 1988** - The Bureau of Land Management and the Army Corps of Engineers jointly issued the final EIS for the TAGS project. This document was prepared in cooperation with all interested and involved Federal and State agencies; it analyzes construction and operation of the proposed TAGS, an alternate routing to Cook Inlet, and a no-action alternative.

Exportation of Alaskan Crude Oil and Natural Gas

Crude oil production in Alaska occurs in two areas: (1) the North Slope, consisting of, among others, the Prudhoe Bay field and (2) the Cook Inlet area (see table 3, p.11). The exportation of Alaskan crude oil has been the topic of political debate for many years. Several laws preclude Alaskan crude oil from being exported. Among these laws are (1) Mineral Leasing Act of 1920, (2) the Export Administration Act of 1969, (3) the Trans-Alaska Pipeline Act of 1973, and (4) the Energy Policy and Conservation Act (EPCA) of 1975. The latter law does provide the President with discretionary powers (sec. 103 (b)) to allow exemptions for the exportation of crude oil on the basis of national interest. Discussions of the exportation of natural gas produced in Alaska are still in the preliminary phases. The TAGS project, however, would provide a mechanism for the export of Alaskan natural gas (see discussion on TAGS above).

COOK INLET CRUDE OIL

On October 24, 1985, President Reagan signed a Presidential Policy Directive on the basis of the recommendation of the Economic Policy Council to use his administrative authority to permit the export of Cook Inlet oil. The Secretary of Commerce subsequently made a finding, under Section 103 of EPCA, that the export of Cook Inlet oil was in the Nation's interest. One year later, in December 1986,

the Chinese Petroleum Company of Taiwan became the successful bidder in the State of Alaska's first sale of Cook Inlet crude oil. State officials estimated they received about \$2.4 million more from the export of this crude than if they had sold it within the United States. This was a one-year contract with the Chinese Petroleum Company.

NORTH SLOPE CRUDE OIL

Currently, the North Slope of Alaska produces about 1.8 million bpd of crude oil. A very small amount of this crude is refined for local use on the North Slope, and the balance makes an 800-mile journey to the deepwater Port of Valdez where it is offloaded onto tankers for a variety of destinations. Approximately 20,000 bpd is transported from Valdez to Cook Inlet refineries where it is consumed within Alaska. It is estimated that about 42,000 bpd goes to Hawaii where two refineries are located. The Seattle, Washington, area receives about 212,000 bpd for the refineries in that area. The refineries of California take approximately 900,000 bpd for the many refineries in that State; some of this crude oil is shipped east to Texas from California through the Four Corners Pipeline. About 630,000 bpd of North Slope crude oil is shipped to the Panama Canal where it is offloaded into the Panamanian Pipeline and subsequently onloaded to tankers for destinations in Puerto Rico and the Virgin Islands (117,000 bpd) and Gulf Coast refineries (about 520,000 bpd). (Pacific Oil World, February 1987).

A 1985 amendment to the Export Administration Act mandated a study to examine the advantages and disadvantages of exporting Alaska's North Slope crude oil. The Department of Commerce chaired a multiagency task force that produced the study in May of 1986. The study indicated that removing the prohibition on exporting Alaskan crude oil could bring \$10.2 billion to the United States during the next 13 years.

The opportunity for exporting Alaskan North Slope crude oil occurred with the signing of the U.S./Canadian Free Trade Agreement on December 9, 1987. A provision (Annex 902.5) was made under this agreement for the exemption of Canada from the prohibition of exporting Alaskan crude oil of up to 50,000 bpd, as long as this oil is first transported to a port in the lower 48 States. There is some question as to the constitutionality of this provision which does

not allow Congress to give preferential treatment of one State's port over that of another State's port. This question has not been officially resolved. The Free Trade Agreement is an executive agreement and not a treaty; it therefore does not require the ratification of the Senate. However, it does require that Congress pass implementing legislation. As of September 1988, this legislation had not been passed.

Alaska is not the only State interested in exporting crude oil to other nations. Independent producers in Kern County, California, are lobbying Congress through the Independent Oil Producers Agency to allow the exportation of their heavy crude oil to Pacific Rim nations. Many of the refineries in California are owned by major oil companies and refine their own reserves or are set up to process the lighter Alaskan crude oil, which makes up 40 percent of all crude refined in California. The current crude oil glut in California forced several producers to keep their oil in the ground and consequently helped drive the State's crude prices well below the national average.

Onshore Support Facilities

The two areas of Alaska that currently entertain offshore operations are the Cook Inlet and the North Slope. The Cook Inlet is a mature province with few new reservoirs coming into production. The North Slope is a major oil and gas province. Up to 20 percent of U.S. consumption of oil is supplied by wells located in this area.

Most of the production from the Cook Inlet is used in local markets, with the exception of about 3,200 bpd of the State's royalty oil, which is dedicated to the export market. Support activities for offshore operations is conducted from immediately adjacent areas such as Port Nikiski.

Production from the North Slope is transported to the South Coast port of Valdez via the Alyeska Pipeline and then on to West and Gulf Coast refineries. Support activities for most onshore North Slope wells is conducted out of Deadhorse, Alaska. Support requirements vary for OCS exploratory efforts. Because of demanding logistic considerations many of the newer wells have been largely self-supporting with backup provided by nearby areas having airstrips.

REFINERIES

There are six refineries in the State of Alaska. Two of these refineries are located on the North Slope and serve only local needs. Two of the remaining refineries are located at North Pole, near Fairbanks, and two are at Kenai. At the beginning of 1988, these six refineries had a capacity of 225,000 bcpd (Oil and Gas Journal, issue 12, vol. 86, p. 53, March 21, 1988). The feedstock for these refineries is all derived from State leases. Substantially more oil is produced in Alaska than can be refined there at present; the remaining production is transported to refineries on the West and Gulf Coasts of the United States.

In 1986, Alaska Pacific Refining, Inc. (APRI) was formed to construct a \$750 million, 100 Mbpd refinery at Valdez. Feedstock for the refinery is to be derived from the Alyeska Pipeline, and the product is destined for export to foreign markets. If completed, the APRI refinery would be the first U.S. refinery dedicated to the export market.

In January 1987, the Valdez City Council approved the leasing of more than 1,500 acres of land to APRI for their facility. Following this, APRI was dealt a temporary setback when a congressional trade bill was introduced that sought to restrict the amount of refined product that could be exported from Alaska. This bill was later vetoed by the President for inclusion of this restriction, as well as for unrelated reasons. APRI now estimates that if construction can begin in the Spring of 1989, it can begin start-up operations in 1992 or 1993.

GAS PROCESSING FACILITIES

At the beginning of 1988, four gas processing plants were operating in Alaska. Three of these plants are located on the Kenai Peninsula; they process gas produced from the Cook Inlet and surrounding areas. The remaining plant is located at Prudhoe Bay; this plant processes more than 95 percent of the gas treated in Alaska. With the exception of 40-50 Mbpd of NGL, most of the gas processed is used locally or used to enhance oil production from the Prudhoe Bay field.

The Prudhoe Central Gas Facility, which is the world's largest gas processing plant, began full operations in 1987. The facility currently has a capacity of more than 4 Bcfd. The operators of the Central Gas Facility recently announced plans to add

a second gas processing plant at Prudhoe. This new plant will boost gas processing capacity at Prudhoe to more than 5 Bcfd. If construction proceeds according to schedule, this new plant will come on line after its components arrive on the 1990 sealift.

CONSTRUCTION FACILITIES

Most of the construction related to oil and gas development in Alaska occurs outside of the State because of the favorable economics and the current lack of specialized facilities. Modules constructed for delivery to North Slope development projects in the past have come from the U.S. Gulf Coast, Oregon, Washington, and from Asian countries. These modules are then transported by barge to Prudhoe Bay during the open-water season.

To encourage local construction the Port of Anchorage recently initiated efforts to develop a 5-acre module construction site. The Port's initial plans focus on smaller modules that can be constructed in Anchorage and then trucked to the North Slope. Recently, a contract was awarded to an Anchorage firm to construct and deliver one such module by early 1989. Longer range plans include improvement of the site to allow the construction of small sealift modules.

Additional Readings

- Bureau of Land Management and U.S. Army Corps of Engineers. June 1988. *Final Environmental Impact Statement for the Proposed Trans-Alaska Gas System*. BLM-AK-PT-88-003-1792-910, 632 p. plus appendixes.
- General Accounting Office. September 26, 1983. *Report to the Chairman, Subcommittee on International Economic Policy and Trade, Committee on Foreign Affairs, House of Representatives, Pros and Cons of Exporting Alaskan North Slope Oil*. GAO/NSIAD-83-69, 21 p. plus appendix. Available from GAO, Information Handling and Support Facility, Document Handling and Information Service Component, Box 6015, Gaithersburg, MD 20877; (202) 275-6241.
- Stein, J. B. *Alaska North Slope Oil Exports: The Pros and Cons*. 17 p. Available from Center for Strategic and International Studies, Georgetown University, 1800 K Street, NW, Suite 400, Washington, DC 20006; (202) 887-0200.

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4. Issues Related to the Exploration and Development of OCS Resources

Alaska Coastal Zone Management Program

The Alaska Coastal Management Program (ACMP) was approved by the Secretary of Commerce in 1979. With this approval, the State of Alaska obtained the right to review with the ACMP, for purposes of consistency, all plans of exploration or development and production covering proposed activities on the OCS. Consistency determinations are made by the Alaska Coastal Policy Council (CPC), supported by the State Division of Governmental Coordination, which is within the Governor's Office of Management and Budget.

The ACMP sets out general standards and guidelines for local governments and, in unorganized areas, elected regional coastal resource service area boards to follow in preparing district coastal management programs for their jurisdictions. After a resource inventory and a draft coastal management program are prepared, public hearings are conducted, and local conceptual approval is given to the draft plan. The plan is then submitted to the Alaska CPC for review and approval. When the CPC approves a district plan, it is submitted to the Secretary of Commerce for review as a modification or amendment to the ACMP. The Office of Coastal Resource Management within NOAA conducts staff work for the Secretary. Once Secretarial approval is received, the plan is sent back to the district for adoption by ordinance and filed with the Alaska Lieutenant Governor, at which point it enters into effect. (District plans are used by local and State planners to guide development that occurs in, or that directly affects, the coastal zone in their jurisdictions. Table 9 (p.40) summarizes the status of the ACMP district programs.)

The Office of Ocean and Coastal Resource Management is currently conducting a study that seeks to identify successful permit simplification efforts being undertaken by coastal States in administering their coastal management programs. The results of this study will be used to make recommendations to

coastal States on ways to improve their permit processing. The scope and intent of this study were outlined in a *Federal Register* notice issued on April 17, 1987 (52 FR 12579). The study itself stems from a Presidential directive promulgated on June 6, 1986, that among other things directed the Secretary of Commerce to review State coastal management programs in an attempt to advance the national interest in energy security. It is anticipated that the Office of Ocean and Coastal Resource Management will complete this study during 1988.

Distribution of Section 8(g) Funds

In 1978, the U.S. Congress established a buffer zone on the federally controlled OCS adjacent to State controlled portions of U.S. offshore submerged lands in order to compensate the coastal States for the possibility of trans-boundary oil and gas resources. The 8(g) zone, named after the provision of the law that established it, extends 3 nautical miles seaward of the State-Federal offshore boundary.

In April 1986, section 8(g) of the OCS Lands Act (43 U.S.C. 1337 (g)) was amended to provide that 27 percent of the escrowed bonuses, rents, and royalties derived between September 1978 and October 1986 from Federal OCS leases in the 8(g) zone be distributed to the coastal States adjacent to those leases. In addition, Section 8(g) requires the MMS to make monthly payments to these same States on the basis of current revenues from the 8(g) zone.

According to the legislation that amended Section 8(g), the coastal States affected will also receive an additional \$650 million over a 15-year period: 3 percent for the first 5 years, 7 percent for the next 5 years, and 10 percent for the last 5 years. More than \$60 million has been disbursed by MMS to Alaska, including the initial distribution from the escrow account, the first installment payment, and monthly payments through April 1988.

Table 9. Status of district programs of the Alaska Coastal Management Program

District	Program effective date or status
<i>A. Approved programs that make up the ACMP:</i>	
Municipality of Anchorage (amended)	June 22, 1981
Annette Islands Indian Reserve	*
City of Bethel	January 3, 1984
Bristol Bay Borough	January 3, 1984
Bristol Bay CRSA	February 17, 1987
Cenaliurrit CRSA	March 11, 1985
City of Cordova (amended)	November 24, 1986
City of Craig	May 31, 1985
City of Haines	October 22, 1980
City of Hoonah	November 1, 1984
City of Hydaburg	May 21, 1984
City and Borough of Juneau	November 25, 1986
City of Kake	May 31, 1985
Ketchikan Gateway Borough	May 1, 1984
City of Klawock	May 31, 1985
Kodiak Island Borough	March 15, 1984
Matanuska-Susitna Borough (amended)	June 8, 1984; Amendment pending local adoption
City of Nome	March 15, 1984
North Slope Borough	May 6, 1988
City of Pelican	October 15, 1984
City and Borough of Sitka (amended)	May 31, 1985
City of Skagway (amended)	August 19, 1983
City of St. Paul	Pending local adoption
City of Valdez	February 4, 1987
City of Yakutat	February 24, 1982
<i>B. Areas meriting special attention (AMSA) outside districts:</i>	
Southern Southeast AMSA's	October 7, 1983
Eyak Lake AMSA	November 24, 1986
<i>C. District programs not yet in effect:</i>	
1. State and locally-approved district programs awaiting Federal approval:	
Aleutians East Borough**	Submitted-October 30, 1985
Northwest Arctic Borough**	Submitted-May 22, 1986
Bering Straits CRSA	Submitted-August 5, 1987
2. Status of remaining districts:	
City of Angoon	Public hearing draft review through September 1988
Kenai Peninsula Borough	Public hearing draft review through October 1988
City of Petersburg	Inactive
City of Whittier	Public hearing draft review by January 1989
City of Wrangell	Inactive
Aleutians West CRSA	Newly designated district

*State and Federal consistency do not apply because of the special legal status of the reserve.

**Determined by NOAA to constitute significant amendments to the ACMP requiring preparation of an environmental assessment.

SOURCE: State of Alaska, Office of Management and Budget, Division of Governmental Coordination (August 19, 1988).

Arctic National Wildlife Refuge

In 1980, Congress enacted the Alaska National Interest Lands Conservation Act (ANILCA). This legislation recognized both the wilderness value and petroleum potential of the Arctic National Wildlife Refuge (ANWR). Section 1002 of ANILCA mandates the Secretary of the Interior conduct baseline studies inventorying fish and wildlife and analyzing the impacts of human activity on the natural resources of the coastal plain. Additionally, Section 1002 requires the Secretary to report to Congress on the following:

- (1) The geologic potential of the coastal plain of ANWR.
- (2) The fish and wildlife resources within the area of high petroleum potential.
- (3) Potential effects from oil and gas development on fish and wildlife resources.
- (4) Transportation and processing scenarios.
- (5) How such oil and gas relates to the national need for additional domestic sources of oil and gas.
- (6) The Secretary's recommendations on whether, and if so how, further oil and gas activities should be allowed on the coastal plain (16 U.S.C. 1342 (h)).

The Fish and Wildlife Service (FWS) was given the responsibility by the Secretary to conduct the section 1002 studies and prepare the section 1002 (h) report to Congress.

In February 1985, the U.S. District Court for the District of Alaska directed the FWS to provide for public review and comment on the 1002 (h) report, originally scheduled to be delivered to Congress during September 1986. By November 1986, the draft report and legislative EIS were released to the public. The Canadian Government subsequently sent a letter to DOI requesting a meeting in January 1987 regarding consultation on the draft report. In February 1987, the Canadian Government released a position paper opposing DOI's draft recommendation to open the coastal plain of ANWR to leasing. In April 1987, the DOI issued their final report on ANWR recommending full leasing of the coastal plain. In June of the same year, the Senate Committee on Energy and Natural Resources held four oversight hearings on DOI's final report.

From January to June 1987, continual discussions between DOI and others on a value-for-value land exchange occurred that would exchange mineral rights on Federal land within ANWR for surface rights owned by Native corporations and the State of Alaska within a variety of Alaskan refuges.

By midsummer, the FWS reached tentative agreements with 18 regional and village Native corporations entitling them to subsurface oil rights of about 166,000 acres in ANWR in exchange for 891,000 acres in other parts of Alaska. Should Native groups ratify the accord, DOI would prepare an EIS for Secretarial approval. The EIS and the Secretary's recommendation would be submitted to Congress for approval. Even if Congress would approve the land exchange, Native groups could not proceed with lease assignments unless Congress opens ANWR to exploration and production. Following these tentative agreements, a flurry of negotiations took place resulting in several proposed contracts drafted between industry and Native groups. Old Harbor Native Corporation would receive \$45.7 million from Texaco Inc. for leasing 58,000 acres of land that the Native organization selected within ANWR. Old Harbor would also receive 14-percent royalties on any oil production. An agreement between Chevron and Phillips Petroleum and Koniag Native Corporation provides for royalties of 20 percent with provisions to convert that to as much as 40-percent net profit. Koniag selected one tract of 3,200 acres, which Chevron/Phillips would lease for \$58.3 million.

An analysis prepared by the State of Alaska's Division of Oil and Gas states that the proposed land exchange between the Federal Government and Native groups could cost the State of Alaska and the Federal Government billions of dollars in terms of lost rents and royalties if significant discoveries are made. Currently, the Alaska Statehood Act and the Mineral Leasing Act of 1920 grant Alaska 90 percent of bonuses, rentals, and royalties that the Federal Government receives from mineral leasing in wildlife refuges in the State. (In February 1988, the Senate Energy Committee approved a provision, Section 601, to the Senate ANWR compromise bill that would set a 50/50 split between Alaska and the Federal Government on royalties and bonuses.) If ANWR lands are traded to Native groups, the State will receive nothing. The State maintains that DOI undervalued the lands targeted for exchange with Native groups. The State's analysis estimated the

value of Federal lands to be acquired under the exchange at \$543.8 million, while a competitive lease sale of the ANWR property would produce much higher revenue. In June 1988, the Secretary of DOI directed the FWS to delay publication of a draft legislative environmental impact statement on the proposed ANWR land exchange until Congress clarifies its intent regarding ANWR.

Several bills, either promoting or opposing the opening of ANWR, are circulating in Congress. These bills represent the full scope of possibilities from maintaining a pristine wilderness to short term, focused exploration programs that earmark funds for the acquisition and maintenance of national wildlife refuges to full-scale leasing of the coastal plain. It is too early to tell in what form, if any, an ANWR leasing program might take.

Appendix: Bibliography of OCS Information Reports

The following is a regional listing of documents published by the OCS Information Program. Entries are arranged by title in reverse chronological order, listing the most recent publication first. Requests for copies of these publications should be directed to:

Document Distribution Center
Offshore Information and Publications
Minerals Management Service, MS 642
1951 Kidwell Drive, Suite 601
Vienna, VA 22180
(703) 285-2280.

As of February 1989, send or phone requests to:

381 Elden Street
Herndon, VA 22070-4817
(703) 787-1080 or (ITS) 787-1080

Alaska Region

Arctic Subregion Summary Reports and Updates

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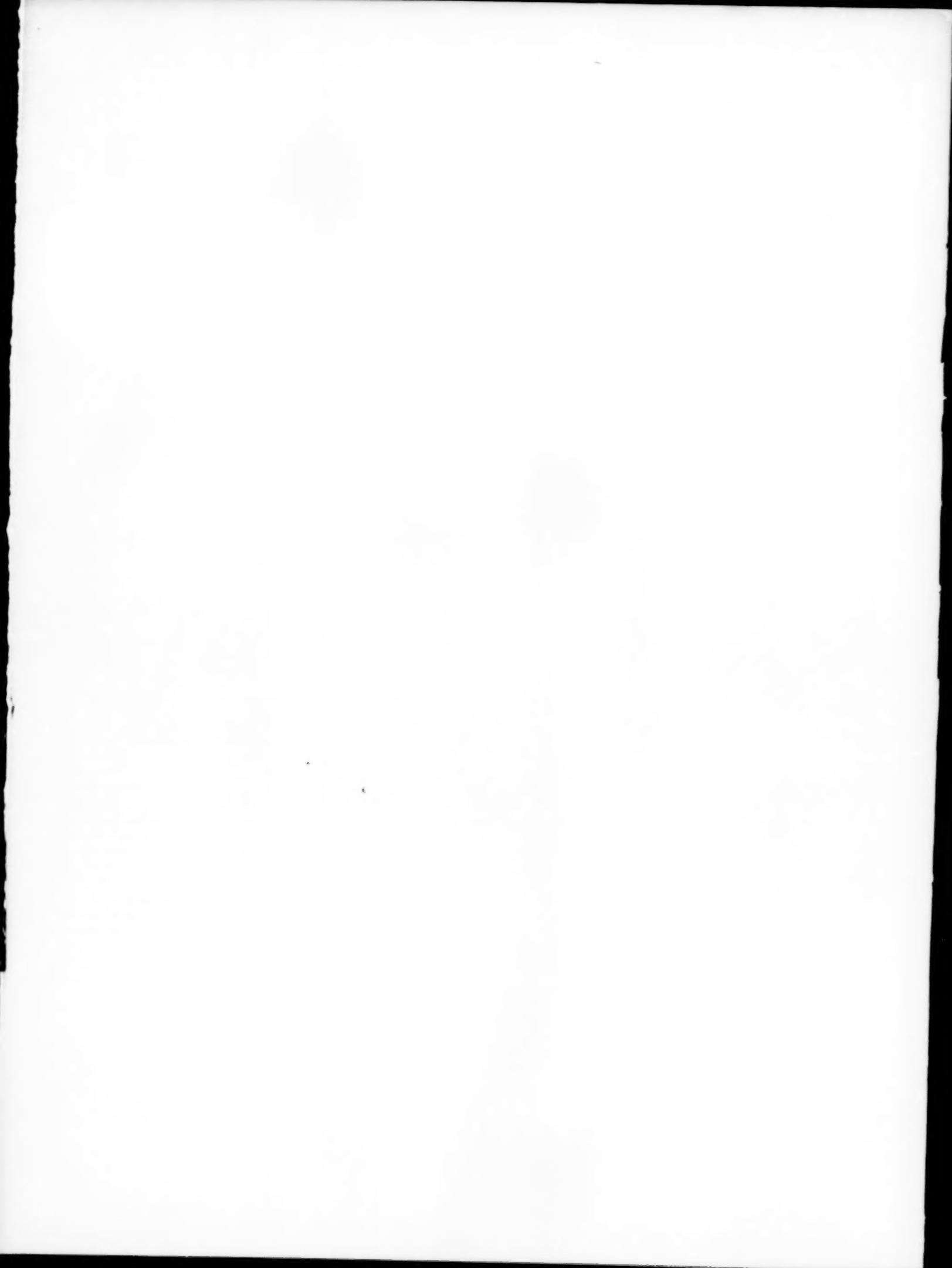
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